MEAT & LIVESTOCK AUSTRALIA

RD&A stocktake

A summary of MLA's research, development and adoption (RD&A) projects from July 2021–June 2023

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Introduction

Meat & Livestock Australia (MLA) fosters the long-term prosperity of the Australian red meat and livestock industry by investing in research, development and adoption (RD&A) activities. Investments cover world-class projects to increase the productivity and profitability of Australia's cattle, sheep and goat businesses.

Between 1 July 2021 and 30 June 2023 MLA invested $402.5 million in a range of research, development and adoption programs. This included $202.8 million invested through MLA Donor Company (MDC). These investments include matching funds from the Australian Government and grants. Information on investment breakdowns and programs of work can be found in MLA's **corporate reporting** and the **2025 Strategic Plan**.

Purpose

This document summarises MLA-funded projects across the research, development and adoption (RD&A), Integrity Systems Company (ISC) and international marketing (R&D) portfolios, from the beginning of July 2021 through to the end of June 2023. It provides details of completed and in-progress projects during this two-year period.

The document has been compiled to create more visibility of the range of projects that MLA has invested and is investing in on behalf of the red meat industry. It is also intended to help inform MLA's consultation with **stakeholders** and **industry bodies**, which is conducted to identify future investment areas in RD&A. The document provides a comprehensive record of in-progress and existing work, and can be used to identify areas where there are significant gaps in R&D and help avoid duplication of research and resources.

Structure and use

This document provides an overview on MLA's RD&A projects and provides hyperlinks to full reports and further information when available. The document groups projects into their relevance for different species (grassfed cattle, grainfed cattle, sheep & lamb, goats, all grassfed species and all red meat species). The projects are then grouped by program area (e.g. animal wellbeing, feedbase production, livestock genetics, etc.), with completed projects listed before 'projects in progress'.

Please note that at the time of publishing, not all reports were available. However, the information in this document is designed to be used in conjunction with the **R&D search function** on the MLA website, where users can search for specific projects and/or terms of interest (keyword, region, species, etc.).

Each project listed includes a short summary and the following details:

Project code	This can be used to search the MLA website to find further information on the project.
Location	This is the production region the research is relevant to.
Start and end date	This is the planned term of the project. For projects in progress, it helps readers know when research outcomes are expected to be released.
Publication date	Date published on the MLA website.
Funding source	Levy or external partnerships (which are matched with federal government funds). External partnerships are funded by companies and organisations external to MLA.
Initiation or research	Industry, feedlot industry, processing industry or MLA Donor Company.
Vendor	The research institution or supplier.

For further information on any of the projects included in this document, click the relevant hyperlink below or use the project code to search the **MLA website**.

Grassfed cattle

Completed R&D projects

Animal wellbeing

Rumensin capsules for bloat control and sustainability

Project code	P.PSH.1329	**Location**	Southern Australia
Start date	5 July 2021	**Vendor**	Elanco Animal Health
End date	30 December 2023	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project validated the efficacy of a new and improved version of Rumensin to treat frothy bloat in wide-scale field trials, while also developing the commercially up-scaled production method. Frothy bloat in grassfed cattle is a well-known phenomenon and was estimated to cost southern Australian producers ca. $80M in 2015. Whereas the condition was largely controlled by administering low doses of the ionophore chemical Monensin, this was disrupted when Rumensin® slow release rumen capsules were withdrawn from the market in 2013, due to inconsistent performance.

Integrated tick management communications

Project code	B.AWW.0264	**Location**	Queensland, NSW, Northern Australia
Start date	30 Aug 2021	**Vendor**	Dawbuts Pty Ltd
End date	1 Feb 2022	**Funding source**	MLA Donor Company
Publication date	*7 April 2022*	**Initiation of research**	External partnership

This project delivered six practical, producer-facing articles and supplied relevant photographs/images associated with integrated tick management. The consultant worked with the MLA communications team to plan and refined the style of the articles to be suitable for the target audience and publication type. This also entailed briefing in supporting design elements (such as infographics) to MLA graphic designers to be used alongside the articles at least two weeks prior to publication date. The consultant also worked with MLA to identify and contact producers who would be appropriate for a case study relating to the areas of integrated tick management covered in the articles.

Probio-TICK – tick control, nature's way

Project code	P.PSH.1301	**Location**	Northern Australia
Start date	3 May 2021	**Vendor**	Microbial Screening Technologies
End date	30 November 2022	**Funding source**	MLA Donor Company
Publication date	*6 March 2023*	**Initiation of research**	External partnership

This project addressed the fact that ticks on cattle remain the costliest condition confronting Australian grassfed cattle, and host genotype and chemicals of diminishing desirability are the only means of controlling them. Evidence suggests that naturally occurring microbes from Australian soil samples produce acaricidal and insecticidal metabolites, and that applying a mixture of such microbes to cattle reduces their tick counts. This project aimed to further develop the method of applying natural microbes to the hides of cattle to reduce tick numbers. Scientific studies will further improve efficacy through microbe refinement and scale-up of production to good manufacturing practice (GMP) standards. A pathway to registration and a licensable product will be established.

Product development of an Australian trichomoniasis vaccine: Pilot trial

Project code	P.PSH.1368	**Location**	National
Start date	19 January 2022	**Vendor**	The University of Queensland; Hancock Agriculture
End date	31 May 2023	**Funding source**	MLA Donor Company
Publication date	*15 November 2023*	**Initiation of research**	External partnership

This project addressed the need for vaccine development for bovine trichomoniasis, a disease which causes infertility in northern Australian herds. A recent abattoir survey demonstrated that one in ten cull bulls are infected with *Tritrichomonas foetus*. It has become a research priority to develop an Australian trichomoniasis vaccine. Research undertaken in Australia in the 1980s demonstrated an efficacious vaccine, however commercialisation did not occur as the impact of trichomoniasis in Australia was thought to be negligible. The purpose of this study is to evaluate a *T. foetus* killed vaccine in a pilot trial to demonstrate efficacy and safety of vaccination of beef bulls against trichomoniasis.

Beef productivity

Needs and gaps analysis for NB2

Project code	B.GBP.0055	**Location**	Northern Australia
Start date	1 June 2021	**Vendor**	Alan Bell
End date	22 February 2022	**Funding source**	Levy
Publication date	*2 June 2022*	**Initiation of research**	Industry

This project engaged an external consultant to review existing Australian and appropriate overseas R&D material to identify needs and gaps that have direct relevance to the Northern Breeding Business (NB2) program.

NB2 – 'uSuckled': Detection of maternal behaviours associated with suckling in beef cattle

Project code	B.GBP.0058	**Location**	Northern Australia
Start date	1 July 2021	**Vendor**	Northern Territory Department of Industry Tourism and Trade
End date	14 September 2023	**Funding source**	Levy
Publication date	*14 August 2023*	**Initiation of research**	Industry

This project aimed to explore the concept that suckling can be detected using remote monitoring devices (such as accelerometers, sound monitors and GPS trackers) attached to free-grazing cows. This documents a non-invasive, remotely-detectable, dam-based method to approximate when a calf has been born, indicate whether the calf was born alive, if it suckled normally or not, and if the occurrence of suckling prematurely stops, which may indicate a self-weaning or mortality event.

LPP Improving profit from pasture through increased feed efficiency

Project code	P.PSH.1000	**Location**	National
Start date	22 February 2018	**Vendor**	CSIRO; NSW DPI
End date	1 July 2023	**Funding source**	MLA Donor Company
Publication date	*24 April 2024*	**Initiation of research**	External partnership

This project is part of the Livestock Productivity Partnership (LPP) portfolio. This interdisciplinary project aimed to lead to a greater understanding of the rumen digestive/microbiome complex, grazing behaviour and pasture intake – and by applying this knowledge to practical feeding, management and breeding programs, is set to result in higher efficiencies for grazing cattle.

Eating quality

Reconditioning and eating quality potential of older female cattle

Project code	L.EQT.1910	**Location**	National
Start date	1 June 2019	**Vendor**	Charles Sturt University
End date	30 September 2021	**Funding source**	Levy
Publication date	*5 March 2024*	**Initiation of research**	Industry
This project aimed to investigate the ability of older female cattle to regain body condition at short feeding intervals as well as the subsequent effect on meat eating quality and compliance to market specifications. Seventy-two head of Angus cows, across four treatment groups, were fed and processed at Charles Sturt University and Teys Australia.			

MSA saleyard pathway evaluation and feeding options

Project code	P.PSH.0513	**Location**	National
Start date	1 January 2021	**Vendor**	RLX Operating Company
End date	30 June 2023	**Funding source**	MLA Donor Company
Publication date	*18 March 2024*	**Initiation of research**	External partnership
The project investigated an extended time frame for cattle consigned via saleyards to the MSA program, and the impact of supplementary feeding options for cattle purchased at saleyards destined for MSA.			

IT Services Maintenance Agreement 2021–22

Project code	L.MSG.2203	**Location**	National
Start date	30 September 2021	**Vendor**	Apheta Data Solutions
End date	29 March 2023	**Funding source**	Levy
Publication date	*24 January 2024*	**Initiation of research**	Industry
The purpose of this project was to provide maintenance of the MSA Processor and End User online order system for MSA inserts and point of sale material, the online MSA producer and End User training and administration portals and MSA producer reaccreditation requirements in LPA.			

Feedbase production

Desktop analysis of opportunities for oil-enhanced forages

Project code	B.PAS.0362	**Location**	National
Start date	12 May 2021	**Vendor**	CSIRO
End date	30 July 2023	**Funding source**	Levy
Publication date	*8 August 2023*	**Initiation of research**	Industry

This project aimed to identify and prioritise investment opportunities for the development of oil-enhanced forages for Australian livestock industries to promote higher productivity through increasing feed intake, liveweight gain and feed efficiency and a reduction in methane emissions. CSIRO has recently developed technology allowing the accumulation of unprecedented levels of storage lipids (oils) in vegetative plant tissues of tobacco and sorghum. This platform technology can enable engineering of energy-dense forage crops through precision genome editing (non-GM).

Livestock export (research & development)

Dairy economics communications

Project code	W.RDE.0027	**Location**	International
Start date	13 January 2023	**Vendor**	Anvil Media Pty Ltd
End date	30 June 2023	**Funding source**	Industry partnership (LEP)
Publication date	*21 March 2024*	**Initiation of research**	Industry

This project aimed to produce communication pieces to highlight the benefits provided to producers through the supply of cattle to the live export dairy trade. For example, the use of farm technologies such as sexed semen has resulted in a surplus of heifers which can be sold to live export and therefore diversify farm income. This presents opportunities for the Australian live dairy cattle trade, particularly with the cessation of the supply of live dairy cattle from New Zealand. The project also provides information to producers about where live cattle are supplied to, the benefits of selling cattle to the trade and how they are treated overseas.

Value of the dairy cattle export industry

Project code	W.RDE.0010	**Location**	International
Start date	8 December 2021	**Vendor**	BDO Services Pty Ltd
End date	30 June 2022	**Funding source**	Levy
Publication date	*5 March 2024*	**Initiation of research**	LEP

This project aimed to contribute detailed economics research and analysis into the value and importance of the Australian live dairy cattle trade so as to support industry to clearly understand and openly demonstrate its economic benefits. The project was identified by LiveCorp members as a high priority for industry and will ensure the Australian public, as well as law makers and decision makers, understand the benefits brought by the livestock export industry to farm gate prices, improved animal welfare and the Australian economy.

Livestock genetics

Northern Beef Information Nucleus – Brian Pastures Phase 3

Project code	P.PSH.2131	**Location**	Northern Australia
Start date	1 July 2021	**Vendor**	Australian Brahman Breeders' Association
End date	30 June 2022	**Funding source**	MLA Donor Company
Publication date	*30 September 2022*	**Initiation of research**	Industry

This project is an extension of the Australian Brahman Breeders Association LTD, Droughtmaster Stud Breeders Society LTD and Santa Gertrudis Research Herds Beef Information Nucleus (Project P.PSH0774). It utilised the steer proportion of the animals produced from the Repronomics II Project (P.PSH.1221) whose half sisters were recorded for reproduction traits. The project will continue to build capacity and broaden the scope of phenotypic carcase and meat quality data in participating breeds which are not yet at an optimum level for Single Step genetic evolutions. In addition, the finished steers were processed at Teys Australia Lakes Creek meatworks where they were put through the DEXA unit as well as other objective carcase grading technology available at Lakes Creek. This data is to be used to deliver a more accurate genomic Estimated Breeding Value (EBV) for meat yield.

Northern Beef Information Nucleus – Spyglass Phase 3

Project code	P.PSH.2132	**Location**	Northern Australia
Start date	1 July 2021	**Vendor**	Australian Brahman Breeders' Association
End date	30 June 2022	**Funding source**	MLA Donor Company/ Commercial
Publication date	*5 October 2022*	**Initiation of research**	Industry

This project is an extension of the Australian Brahman Breeders Association LTD and Droughtmaster Stud Breeders Society LTD Beef Information Nucleus (Project P.PSH.0743). It utilised the steer proportion of the animals produced from the Repronomics II Project (P.PSH.1221) whose half sisters were recorded for reproduction traits. The project will continue to build capacity and broaden the scope of phenotypic carcase and meat quality data in participating breeds which are not yet at an optimum level for Single Step genetic evaluations. In addition, the finished steers were processed at Teys Australia Lakes Creek where they were put through the DEXA unit as well as other objective carcase grading technology available at Lakes Creek. This data is to be used to deliver a more accurate genomic Estimated Breeding Value (EBV) for meat yield and other meat science traits.

Producer adoption

Demonstrating the productivity and profitability of cattle grazing 'Redlands' leucaena in northern Queensland

Project code	B.GBP.0040	**Location**	Northern Australia
Start date	15 March 2019	**Vendor**	QLD DAFF
End date	16 December 2022	**Funding source**	Levy
Publication date	*16 May 2023*	**Initiation of research**	Industry

This project aims to boost adoption of the psyllid resistant 'Redlands' (R12) Leucaena variety developed by MLA and UQ. A barrier to adoption of the variety is the lack of defendable and valid liveweight productivity data. Previous project B.NBP.1618 found Redlands fed cattle gained 0.33kg on average per day, which was slightly less than those fed Wondergraze. This project is an extension of B.NBP.1618 and supports previous MLA investment to now provide replicated liveweight gain performance data from Redlands compared with the 'psyllid susceptible' Wondergraze variety and demonstrate a cost benefit analysis of the Redlands variety. This project also includes an element of extension and awareness activity.

NABRC regional funds management 2021–22

Project code	L.NAB.2201	**Location**	Northern Australia
Start date	1 July 2021	**Vendor**	North Australia Beef Research Council
End date	1 April 2023	**Funding source**	Levy
Publication date	*30 April 2024*	**Initiation of research**	Industry
This project involves an agreement which covers the 2021—22 allocation of MLA funds for the Council to be administered by NABRC on behalf of MLA. The funds are to be used for NABRC Regional Committee operations, producer member sitting fees and travel expenses, meeting expenses, producer member training, member recruitment costs and the NABRC secretariat management fee.			

Sustainability (on-farm)

Defining the pathway for remediating mining land for productive, profitable and sustainable beef production

Project code	P.PSH.2135	**Location**	Queensland
Start date	1 September 2021	**Vendor**	Central Queensland University
End date	28 March 2022	**Funding source**	MLA Donor Company
Publication date	*10 August 2022*	**Initiation of research**	External partnership
This project engaged with the resources sector to position beef production as a change agent for carbon sequestration and biodiversity. The project works to define the commercial opportunity that rehabilitation and mine closure processes afford the beef industry, identify and characterise livestock systems that sequester carbon and build biodiversity, and develop an action-research strategy for outcomes that provide scalable beef production on land relinquished through mine closures.			

Environmental credentials for beef

Project code	L.SFP.1012 & L.SFP.1014	**Location**	National
Start date	1 September 2021	**Vendor**	Cibo Labs Pty Ltd; Rm Consulting Group Pty Ltd; Servian Pty Ltd; John James
End date	30 January 2023	**Funding source**	External partnership and industry
Publication date	18 April 2024	**Initiation of research**	Industry
This project's investment goal was to enable growth in the value of and trust in Australian grassfed beef products and their production through demonstrating environmental credentials. This addressed the absence of a national online platform for Australian red meat producers to verify climate and biodiversity credentials for Australian grassfed beef. MLA should invest because the Environmental Credentials Information Technology (ECIT) platform is crucial to achieving the milestones outlined in the Smart Farming Partnership Grant, which MLA is leading through the Environmental Credentials of Grassfed Beef project. Online facilitation services were also delivered so co-design working groups could achieve high quality engagement and contributions from working group members. This service was needed to ensure the final solution built as a result of these workshops met the needs of grassfed beef producers.			

Greenham Beef Sustainability Standard on-farm pilot

Project code	P.PSH.1396	**Location**	National
Start date	1 May 2022	**Vendor**	Greenham Pty Ltd; Pinion Advisory
End date	2 December 2022	**Funding source**	MLA Donor Company
Publication date	*29 April 2024*	**Initiation of research**	External partnership

This project specifically supported the three-month on-farm pilot of the Greenham Beef Sustainability Standard. The Greenham Beef Sustainability Standard was developed in response to growing market demand for robust and transparent sustainability credentials. The optional on-farm standard was developed in partnership with Greenham cattle suppliers and Pinion Advisory and is built around the four themes identified in the Australian Beef Sustainability Framework (ABSF); animal welfare, economic resilience, environmental stewardship, and people and the community.

R&D projects in progress

Animal wellbeing

Novel wound treatment strategies for dehorning of cattle

Project code	P.PSH.2019	**Location**	Northern Australia
Start date	17 January 2022	**Vendor**	University of Sydney
End date	31 December 2025	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project will deliver a multi-disciplinary and collaborative approach to developing novel dehorning wound treatment strategies to minimise haemorrhage, protect from infection and flystrike, and enhance healing. The aim is to improve welfare and reduce morbidity and mortality following dehorning of cattle using effective and practical strategies. Dehorning of cattle is a common practice in Australia and will continue until the entire beef herd is polled, which will take time. It is therefore essential to explore options for mitigating the impact of dehorning on cattle welfare. Dehorning of cattle causes significant pain and distress and often results in large, open wounds that take up to 14 weeks to heal. Current treatment options fail to adequately ameliorate the pain associated with dehorning, and do not address the excessive haemorrhage, infection and flystrike that often occurs post-operatively.

Beef productivity

NB2: The Northern Breeding Business (NB2) program pilot producer groups

Project code	P.PSH.1324	**Location**	Northern Australia
Start date	1 June 2021	**Vendor**	North Australian Beef Research Council
End date	27 April 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project will establish four pilot producer groups throughout 2021–2023 as part of the Northern Breeding Business (NB2) initiative, through the Pathway to Practice pillar. This pillar, which will be led by QDAF in WA DPIRD in two separate parent agreements to these pilot groups, is designed to drive the extension and adoption outcomes for NB2, including past, current and future R&D, using a peer-to-peer learning format. The four pilot groups (two in Queensland, one in NT and one in WA) will run concurrently across northern Australia under the Pathway to Practice pillar. The aim is to use these pilots to fine tune the data collection system, along with the peer-to-peer learning platform, to enable a full roll-out of enough groups to include up to 250 producers by the end of 2027.

BeefLinks: Feedlot performance

Project code	P.PSH.1468	**Location**	Western Australia
Start date	15 May 2023	**Vendor**	University of Western Australia
End date	15 June 2025	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project aims to address the relative lack of robust data sets concerning cattle flow across the North-South supply chain all the way through to feedlots. To improve efficiency, baseline data on existing practices, cattle specifications, targets for liveweight and nutritional management across the 'rangeland-backgrounding-feedlot' continuum is essential to identify where key knowledge gaps lie.

BeefLinks: Socio-economic research platform

Project code	P.PSH.2136	**Location**	Western Australia
Start date	15 June 2021	**Vendor**	University of Western Australia
End date	14 September 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project takes a transdisciplinary approach across the suite of BeefLinks projects to identify barriers to adoption, market-based risks and strategies that can be implemented by producers and industry to enhance practice change through adoption and minimise these risks. The BeefLinks program aims to achieve profitable, consistent, and sustainable beef yields through the integration of RD&E activities across northern WA. As an 'influencer', the project will provide the catalyst to develop and scope broader additional co-funded involvement and partner activities across the BeefLinks program to ensure a clear adoption strategy on- and off-farm is developed and implemented for this value chain.

NB2: Assessing practical interventions to reduce calf wastage and herd mortality in northern systems

Project code	P.PSH.1314	**Location**	Northern Australia
Start date	5 July 2021	**Vendor**	Central Queensland University, The University of Queensland
End date	15 October 2026	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project responds to the findings that poor nutrition and environmental stress during calving are major causes of calving difficulty and calf mortality. This proposal aims to assess the impact of nutritional interventions and environmental stress around calving on cow and calf mortality, and to validate the use of relevant on-farm diagnostic tools to objectively measure baseline performance against that achieved with the interventions.

NB2: NAVG delivery of activities included in the 'Pathway to Practice' pillar of the Northern Breeding Business (NB2) program

Project code	L.GBP.0063	**Location**	Northern Australia
Start date	13 October 2022	**Vendor**	North Australian Veterinary Group
End date	31 July 2025	**Funding source**	Levy
Initiation of research	Industry		

This project focuses on adoption and practice change, led by producers for producers, thereby maximising the opportunity for peer-to-peer communication as the primary method of creating, acquiring, testing and implementing innovations.

North Australian Veterinary Group Pty Ltd (NAVG) will facilitate the NB2 producer group associated with producer properties in the Cloncurry region. This critical NB2 project will actively engage producers in the Cloncurry region in the use of objective data to inform business decisions around reproductive performance and calf mortality and provide a direct conduit from research and development outcomes to changes in business practice.

Phosphorus map of Queensland's grazing lands 2

Project code	B.GBP.0063	**Location**	Queensland
Start date	31 May 2023	**Vendor**	Queensland Parks & Wildlife Service
End date	30 October 2024	**Funding source**	Levy
Initiation of research	Industry		

This project will produce a 1ha resolution phosphorus map for three of Queensland's extensive beef producing regions. These high quality maps will be incorporated in the revised MLA publication 'Phosphorus management of beef cattle in northern Australia'. Three NRM regions remain to be mapped: the Gulf Savannah, Southern Gulf and Cape York Peninsula. Completed to date is a 1ha resolution map for Fitzroy, Burnett, Southeast, Darling Downs and Balonne, Burdekin, Herbert, Wet Tropics, Atherton Tablelands, and the Mitchell grasslands of the Thompson and the Channel Country. The remaining blank areas are key areas of phosphorus deficiency.

NB2: Indigenous Land and Sea Corporation Group 2

Project code	P.PSH.1480	**Location**	Northern Australia
Start date	1 July 2023	**Vendor**	LPM (QLD) Pty Ltd
End date	30 June 2025	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project follows the first Indigenous NB2 group being formed in 2021. Group formation was initiated with several on property meetings with management staff and board members. The group is currently working with eight Indigenous groups, seven properties with an approximate total of 75,000 head and 35,000 breeders. This component of NB2 is jointly funded by MDC, ILSC Tropical North Queensland drought hub and AHA and has a focus on achieving the NB2 aims of improved productivity and profitability and the development of Immersive Technology tools and the use of these tools for biosecurity and training applications.

Feedbase production

Management options and species evaluation to increase productivity in dieback affected pastures – PHASE II

Project code	B.PAS.0513	**Location**	Queensland
Start date	2 August 2021	**Vendor**	Applied Horticultural Research
End date	1 January 2025	**Funding source**	Levy
Initiation of research	Industry		

The aim of the project is to complete work commenced in B.PAS.0507 – PHASE I which established a series of agronomic and management trials to evaluate new practices for the control of pasture dieback and feed options for livestock in dieback affected regions. The trial sites leverage against a collaborative network of research and demonstration sites to communicate effective practices to producers.

Data driven system optimising the forage base for sustainable beef production

Project code	P.PSH.1340	**Location**	National
Start date	1 September 2021	**Vendor**	Applied Horticultural Research
End date	2 January 2025	**Funding source**	Levy
Initiation of research	Industry		

This project recognises that livestock production occurs over diverse landscapes and forage base compositions which are overlayed by an increasingly variable climate. The project will develop tools to support complex decisions to implement a zonal management approach to optimum species selection, their placement in the landscape and grazing management decisions to ensure persistence of a diverse species pasture/forage base. It will deliver a robust, data driven performance-based system for livestock production with a minimum 10% increase in pasture utilisation and increased feedbase sustainability.

Biocrusts and the living skin of rangelands

Project code	B.PAS.2300	**Location**	Rangelands
Start date	5 June 2023	**Vendor**	Outcross Genetics Australia Pty Ltd
End date	5 January 2024	**Funding source**	Levy
Initiation of research	Industry		

This project aims to develop a high quality six-to-seven-minute video including an animation sequence for rangeland beef producers that effectively communicates the biocrust story to industry. Biocrusts are the living skin of the earth and an essential component of healthy ecosystems, particularly in arid and semi-arid regions. However, many producers in the northern rangelands are unaware of their existence and the important role they play in sustaining livestock production, maintaining land condition and building natural capital. They play a crucial role in soil stability, water retention and nutrient cycling. The video(s) will be an essential tool in raising awareness and promoting recommended management practices of biocrusts. They can be used in a variety of settings, including classrooms, public events, and social media.

Improving GLM in Queensland: Queensland Pasture Resilience program

Project code	P.PSH.1433	**Location**	Queensland
Start date	5 January 2023	**Vendor**	Queensland Department of Agriculture and Fisheries
End date	2 September 2029	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project is one of four proposed MDC investments developed in partnership with DAF that collectively form the Queensland Pasture Resilience program (QPRP). The project (Improving Grazing Land Management) aims to prevent and reverse decline in carrying capacity in Northern Australia by developing improved grazing land management (GLM) strategies as well as helping producers start using these at commercial scale with small group and one-on-one coaching. As a direct result of the investment, 263 producers will be implementing a practice change on approx. 395,000ha.

NQ Sown Pastures: Queensland Pasture Resilience program

Project code	P.PSH.1431	**Location**	North Queensland
Start date	5 January 2023	**Vendor**	Queensland Department of Agriculture and Fisheries
End date	2 September 2029	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project is one of four proposed MDC investments developed in partnership with DAF, that collectively form the Queensland Pasture Resilience program (QPRP). The project (NQ node) aims to improve adoption of legumes by demonstrating liveweight gains possible from well managed legumes, improve agronomic methods for establishing legumes and help producers start using them at commercial scale with small group and one-on-one coaching. The project will have impact through improved producer adoption of legumes to simultaneously improve profitability and address declining land condition in North Queensland. As a result of the investment, 105 producers will implement a practice change on approx. 83,600ha (equivalent of 5% of 67 properties managing 1.7M ha overall).

CQ Sown Pastures: Queensland Pasture Resilience program

Project code	P.PSH.1432	**Location**	Central Queensland
Start date	5 January 2023	**Vendor**	Queensland Department of Agriculture and Fisheries
End date	2 September 2029	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project is one of four proposed MDC investments developed in partnership with DAF that collectively form the Queensland Pasture Resilience program (QPRP). The project (CQ node) aims to help graziers protect against or recover from pasture dieback and pasture rundown by identifying and demonstrating dieback tolerant grass species and the best legumes for CQ and helping producers adopt them at commercial scale through small group and one-on-one coaching. The project will have impact through improved producer adoption of legumes to simultaneously improve profitability and improve resilience to pasture rundown, pasture dieback and declining land condition in South Queensland. As a result of the investment, 231 producers will be implementing a practice change on approx. 92,000ha.

SQ Sown Pastures: Queensland Pasture Resilience program

Project code	P.PSH.1434	**Location**	Southern Queensland
Start date	5 January 2023	**Vendor**	Queensland Department of Agriculture and Fisheries
End date	2 August 2029	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project is one of four proposed MDC investments developed in partnership with DAF, that collectively form the Queensland Pasture Resilience program (QPRP). The project (SQ node) aims to improve adoption of legumes by continuing the development of new legume varieties, demonstrating their benefits, improving agronomic packages for establishing them, and helping producers start using them at commercial scale with small group and one-on-one coaching. The project will have impact through improved producer adoption of legumes to simultaneously improve profitability and improve resilience to pasture rundown, pasture dieback and declining land condition in South Queensland. As a result of the investment, 222 producers will be implementing a practice change on approx. 69,000ha.

Innovation capability building

Stanbroke Co-Innovation program manager

Project code	P.PIP.0588	**Location**	Queensland
Start date	16 August 2021	**Vendor**	Stanbroke
End date	19 February 2025	**Funding source**	MLA Donor Company
Initiation of research	Commercial partnership		

This project's investment goal is to develop and implement a high value product, brand and market Co-Innovation strategy. The project supports a Co-Innovation program manager to scope, develop and implement the high value product innovation strategy at Stanbroke, assisting the business to build the capability required to effectively differentiate their offer to become a trusted source of high-quality protein capturing additional long-term value for the business.

Casino Food CN30 innovation program

Project code	P.PSH.1322	**Location**	National
Start date	15 June 2021	**Vendor**	Northern Co-Operative Meat Company Ltd
End date	30 July 2025	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project will develop carbon management capability within Casino Food Co Op (NCMC) and their co-operative producer base with the objective of enabling the generation of carbon credits from co-op members that can be used within the NCMC supply chain. The research project will also include the development of a methodology that supports a modelled approach to estimating soil organic carbon change that will provide a more cost effective alternative to verify the change needed for carbon markets.

Pilbara Innovation Partnership program

Project code	P.PSH.1404	**Location**	Western Australia
Start date	15 August 2022	**Vendor**	WA DPIRD
End date	15 May 2026	**Funding source**	MLA Donor Company
Initiation of research	Commercial partnership		

This project involves the agreement between Rio Tinto and DPIRD (Western Australian Agriculture Authority) to commence a collaborative Co-Innovation Strategy program with MLA over a three-year period commencing September 2022. The focus of the program will be to create an integrated R&D and adoption innovation hub that will benefit both the broader Kimberley and Pilbara industry and the Rio Tinto agriculture business. This will be achieved through the development of growth strategies and innovation capability in the following areas; irrigation innovation and demonstration including pasture production optimisation, sustainability, and environmental stewardship (CN30), workforce capability (including Indigenous stakeholders) and the demonstration of innovative digital tech technologies.

Livestock genetics

Northern Beef Information Nucleus (Spyglass) Phase 4 extension

Project code	P.PSH.1386	**Location**	Queensland, Northern Territory
Start date	1 July 2022	**Vendor**	Australian Brahman Breeders' Association
End date	30 June 2025	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project adds value to the 'Repronomics II – Building and delivering effective genomic selection for northern Australian cattle' project (P.PSH.1221) by taking the Brahman and Droughtmaster steer progeny from Spyglass Research Station, Charters Towers, and collecting data on additional traits which include weight carcase, meat quality and structural soundness data. In addition, this extension will include work towards the development of health and resilience as well as feed efficiency Estimated Breeding Values. Immune competence data will be collected at weaning and previously collected structural soundness data, as well as new data, will be analysed. CSIRO/NSW Agriculture eGrazor collar technology will be tested against feedlot Growsafe feed efficiency units. In 2023 when eGrazor is converted to smart tag platforms, smart tags will be used to collect grazing feed intake data and grazing feed efficiency as well as methane output.

Northern Beef Information Nucleus (Brian Pastures) Phase 4

Project code	P.PSH.1408	**Location**	Queensland, Northern Territory
Start date	1 July 2022	**Vendor**	Australian Brahman Breeders' Association
End date	30 December 2025	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project adds value to the 'Repronomics II – Building and delivering effective genomic selection for northern Australian cattle' project by taking the Brahman, Droughtmaster and Santa Gertrudis steer progeny from Brian Pastures Research Station and collecting data on additional traits. It is aligned with the Northern BIN Spyglass project, which does not include Santa Gertrudis cattle, hence it being a separate project. Additional weight, carcase, meat quality and structural soundness data is collected to expand and balance the traits available for selection with the female reproduction traits from the Repronomics II project in the reference populations of the participating breeds. Immune competence data will be collected at weaning and previously collected structural soundness data, as well as new data, will be analysed. CSIRO/NSW Agriculture eGrazor collar technology will be tested against feedlot Growsafe feed efficiency units in 2022 in the Spyglass project.

On-farm genomics: Genomic solutions for northern beef cattle management and breeding

Project code	P.PSH.1401	**Location**	Northern Australia
Start date	1 June 2022	**Vendor**	The University of Queensland
End date	1 June 2026	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project recognises the challenges caused by the lengthy delivery times and remote structure of the northern beef industry which means that current genotyping and phenotyping approaches are not widely used, as the cost of the required multiple musterings renders the use of genomic breeding values (GBV) financially unsustainable. The project develops a platform to overcome the current technology limitations and to increase the accuracy of trait recordings, including birthdates and parentage, which are required not only for registration but also to ensure continuous improvement of important traits such as calving interval.

Industry-driven reference population for northern multi-breed genomic selection

Project code	P.PSH.1403	**Location**	Queensland, Northern Territory
Start date	1 July 2022	**Vendor**	University of New England
End date	30 June 2027	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project will instigate an industry-funded and driven research model that will provide a framework for the collection of high quality reference population data to enable ongoing and effective across-breed genomic selection in northern Australia. The project will intensively record a large array of production, reproduction and welfare traits on the latest genetics of leading industry seedstock herds across relevant breeds at a central test location. This unique industry model will be a new and powerful way to develop and foster a culture of using within- and across-breed differences to drive genetic change in our tropical beef breeds.

Objective measurement

Image and sensor technologies to categorise mobility in beef cattle

Project code	P.PSH.1424	**Location**	National
Start date	1 November 2022	**Vendor**	University of New England
End date	1 July 2026	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project will investigate the application of camera and sensor-based technologies to categorise structural soundness in Australian beef cattle. The outcome will be to enable more efficient selection for structurally sound and healthier animals that remain in the herd longer, leading to more sustainable and profitable beef cattle breeding programs.

Producer adoption

Producing profitable southern beef heifers

Project code	L.ADP.2202	**Location**	Southern Australia
Start date	1 October 2021	**Vendor**	University of Adelaide
End date	31 August 2025	**Funding source**	Levy
Initiation of research	Industry		

This project will develop a targeted adoption program focused on driving measurable on-farm practice change to increase whole of life cow productivity for southern beef producers. The investment will build on previous research conducted across southern Australia for winter/spring and autumn calving systems. This presents a unique opportunity to lift southern beef heifer weaning rates by 10% and engage a minimum of 180 producers with at least 250 heifers each, or a total of 45,000 heifers/first calf cow, (plus 40,000 heifers/first cow from the pilot program).

Increasing adoption of phosphorous supplementation in northern Australia (WA)

Project code	P.PSH.1284	**Location**	Western Australia, Northern Australia
Start date	1 July 2021	**Vendor**	WA DPIRD
End date	31 July 2026	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This integrated R&D PDS project's purpose is to increase adoption of phosphorus (P) supplementation in northern Australia. The adoption emphasis is focused on properties that have not adopted P supplementation because they feel that it is too difficult to implement in the wet season. Achieving this would greatly increase the productivity, profitability and sustainability of many cattle properties in northern Australia. The project will do this through a collaborative research phase in conjunction with several PDS projects located across northern Australia involving the NT, Queensland and WA.

Increasing adoption of phosphorous supplementation in northern Australia (Queensland)

Project code	P.PSH.2008	**Location**	Queensland
Start date	10 September 2021	**Vendor**	Queensland Department of Agriculture and Fisheries
End date	15 August 2027	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This integrated R&D PDS project's purpose is to increase adoption of phosphorus (P) supplementation in northern Australia. The adoption emphasis is focused on properties that have not adopted P supplementation because they feel that it is too difficult to implement in the wet season. Achieving this would greatly increase the productivity, profitability and sustainability of many cattle properties in northern Australia. The project will do this through a collaborative research phase in conjunction with several PDS projects located across northern Australia involving the NT, Queensland and WA.

NB2 – Barkly Breeding Group

Project code	B.GBP.0061	**Location**	Queensland; Northern Territory
Start date	15 December 2021	**Vendor**	Bush Agribusiness
End date	18 March 2024	**Funding source**	Levy
Initiation of research	Industry		

This project involves BushAgribusiness facilitating the NB2 producer group associated with corporate properties in the Barkly and Gulf regions that align to the North West Queensland and Barkly NABRC regions. BushAgribusiness will also work with the NB2 coordination group, management committee, pillar leaders and other facilitators/group coordinators to ensure program delivery to NB2 objectives. The NB2 has four activity pillars; being herd, feedbase, pathway to practice and sustainability. Elements of each pillar inform producer groups on current R&D activities, training and skills development opportunities and access to the research/extension community for advice on practice change and on-farm interventions. The effectiveness of each group relies on a dedicated facilitator to provide relevant input on data collection, skills development and support to ensure producer group activities meet NB2 objectives.

NB2: WA delivery of activities included in the 'Pathway to Practice' pillar of the Northern Breeding Business (NB2) program

Project code	P.PSH.2139	**Location**	Western Australia
Start date	27 September 2021	**Vendor**	WA DPIRD
End date	30 April 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This critical NB2 project will actively engage producers in the Kimberley Pilbara region of WA (representing 28,000 breeders) in the use of objective data to inform business decisions around reproductive performance and calf mortality, and provide a direct conduit from research and development outcomes to changes in business practice. This project completes the WA component of the broader Pathway to Practice pillar of NB2, led by QDAF. The vehicle for achieving business practice change will be through the recruitment of five to 10 businesses in an NB2 producer group, who have agreed to participate in the development, education, training and (or) adoption activities. This producer group will have a WA DPIRD facilitator and a producer coordinator.

The focus of this project is adoption and practice change, led by producers for producers, thereby maximising the opportunity for peer-to-peer communication as the primary method of creating, acquiring, testing and implementing innovations.

NB2: Development and implementation of NB2 feedbase data templates, skills training, analysis and reporting

Project code	B.GBP.0060	**Location**	Northern Australia
Start date	16 December 2021	**Vendor**	Range IQ
End date	16 September 2025	**Funding source**	Levy
Initiation of research	Industry		

This project centres around the feedbase pillar of NB2 being designed to develop skills in assessing long-term carrying capacities and pasture-based management decisions that complement the stock flow and financial data sets collected by participating producers. This activity appoints RangeIQ to lead producer activities associated with feedbase assessment and management.

Animal wellbeing extension and adoption partnership

Project code	P.PSH.1371	**Location**	Northern Australia
Start date	1 February 2022	**Vendor**	AA Company
End date	30 October 2026	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project will address two of the big, complex challenges facing Northern Australian livestock production systems – horned cattle and prevention and managing infectious reproductive diseases in extensive cattle herds. A number of animal wellbeing best practices are not undertaken on properties due to challenges of implementing at large scale. Challenges experienced in managing large herds across large land masses requires tailored solutions to ensure cost effective, efficient implementation and on-going management. This project will co-fund a position within Australian Agricultural Company (AACo) to work with MLA to facilitate producer research, extension and adoption activities. The activities of 'transitioning a polled herd' and 'preventing and managing reproductive diseases' adoption pathways will be undertaken and delivered concurrently.

NB2: Pathways to Practice pilot phase evaluation

Project code	B.GBP.0065	**Location**	Northern Australia
Start date	15 December 2023	**Vendor**	Beattie Consulting Services Pty Ltd
End date	30 April 2025	**Funding source**	Levy
Initiation of research	Industry		

This project will deliver an impact evaluation of the pilot phase of NB2: Pathways to Practice. Over three years the pilot phase engaged 47 business across six peer groups in Northern Australia to; improve their understanding of their business and productivity performance through data collection and benchmarking, participate in peer-to-peer learning, and identify and engage in adoption activities that address the needs of the group. This evaluation will assess the economic, productivity, and social/cultural impact of those activities.

e-Learning modules on beef genetic tools

Project code	L.GAP.2300	**Location**	National
Start date	24 April 2023	**Vendor**	Agricultural Business Research Institute
End date	30 June 2023	**Funding source**	Levy
Initiation of research	Industry		

This project will deliver an 'in-depth' eLearning training package on the general principles of genetic improvement, genetic evaluation systems, and genetic and genomic tools available. Hosted on MLA's platform the toolbox, this investment aligns with the MLA genetics adoption strategy and will build the capacity of beef producers and genetics advisors so they can more effectively use genetic tools to drive productivity and profitability in beef cattle enterprises.

FutureBeef – online pathway to adoption for the northern beef industry

Project code	P.PSH.1425	**Location**	Northern Australia
Start date	1 September 2022	**Vendor**	Queensland Department of Agriculture and Fisheries
End date	30 June 2027	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project supports the continuation and further development of the FutureBeef program to support producers along the adoption pathway via online extension strategies including webinars and peer-to-peer interest groups, whilst creating stronger linkages between existing FutureBeef resources and industry adoption programs. A partnership between MLA, QDAF, NT DITT and WA DPIRD, FutureBeef is a 'go to' source of information for northern beef producers, making practical tools, scientific insights, and relevant, timely advice readily accessible through online platforms.

Pasture dieback management strategies for the Northern Rivers region

Project code	P.PSH.1441	**Location**	NSW
Start date	2 December 2022	**Vendor**	Southern Cross University
End date	30 August 2028	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project aims to engage producers in trials of novel approaches to manage pasture dieback through identification of appropriate pasture species and fertility management to maintain groundcover and sustain feed on offer on pasture-dieback-affected land in the North Coast region of NSW. This project will demonstrate a network of pasture species trials, comprising 10 properties distributed across the 570,000ha region of the North Coast region and help producers adopt them at commercial scale through peer-to-peer learning activities. The project will have impact through improved producer adoption of key pasture species relevant to combat pasture dieback, pasture rundown and support producers to identify and manage these species to achieve on-farm practice change.

Sustainability (on-farm)

NEXUS I&P Project – Biochar feeding regime

Project code	P.PSH.2134	**Location**	Tasmania
Start date	2 August 2021	**Vendor**	University of Tasmania
End date	31 December 2025	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This Involve & Partner project is linked to the University of Tasmania NEXUS project and will, in collaboration with a commercial beef producer (TasAgCo), model and measure the impact of a biochar feeding regime on whole farm productivity, profitability and GHG emissions.

EAP – Lick blocks for methane mitigation and production in grazing cattle

Project code	P.PSH.1379	**Location**	National
Start date	25 March 2022	**Vendor**	The University of Sydney
End date	1 October 2025	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project's investment aims to develop practical, economic, and effective lick block formulations using methane-reducing additives (such as vegetable oil, ionophores, condensed/hydrolysable tannins, and saponins) and nutritional supplements (such as P, N, rumen modifiers) to reduce GHG emissions and improve productivity of grazing cattle.

- This investment addresses the lack of practical, effective, and affordable methane emission-reducing methodologies and technologies available to extensive beef producers.
- Development of methane-reducing lick blocks could see a reduction of up to 42% in emissions intensity from northern grazing herds. Lick blocks are a potential a delivery mechanism for other high-impact potential additives, such as 3-NOP and Asparagopsis when these additives are commercially available, proven effective, and safe for use in grazing environments.

Exploring methane inhibitors supplemented through water to increase beef industry sustainability

Project code	P.PSH.1378	**Location**	National
Start date	1 March 2022	**Vendor**	Central Queensland University
End date	30 November 2025	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project will develop a drinking water-based methane suppressant delivery technology for livestock in large extensive breeder and pasture-based backgrounding systems. It addresses the lack of viable anti-methanogenic supplement (including nitrates, 3-NOP, bromoform, ionophores, essential oils) delivery mechanisms for grazing livestock by designing a system that can deliver these supplements through drinking water via remotely managed direct water injection technology (DWIT). MLA should invest in this project because identifying delivery mechanisms for grazing animals is a critical component of the emissions avoidance partnership and because it is a good opportunity to partner with commercial producers and supplement delivery companies and match funding that the project has received through an Advance Queensland grant.

Agri-climate outlooks for Australian agriculture – Northern Australia Climate program 3 (NACP3) – innovative drought and climate variability RD&E

Project code	P.PSH.1381	**Location**	Northern Australia
Start date	1 April 2022	**Vendor**	University of Southern Queensland
End date	30 October 2026	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project involves the 'Northern Australia Climate program' (NACP) Phase 3 building on Phase 2 to deliver innovative research, development and extension outcomes to improve the capacity of the red meat industry to manage drought and climate risk across northern Australia. The RD&E is vertically integrated from world leading climate modelling research, development of industry relevant products and delivery of a targeted extension and adoption service. To be delivered by the University of Southern Queensland (USQ), it includes collaboration between the Bureau of Meteorology (BoM), the UK Met Office (UKMO), State Departments of Agriculture in Queensland (DAF), Northern Territory (DPIR), and Western Australia (DPIRD) and Natural Resource Management (NRM) groups.

Reducing methane emissions and improving profitability in northern Australian beef

Project code	P.PSH.1406	**Location**	Northern Australia
Start date	1 April 2022	**Vendor**	The University of Queensland
End date	30 December 2027	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project addresses the issue that the majority of methane emissions from cattle come from grazing cows in northern Australia, due to the number of animals and relatively poor quality of forage, particularly at certain times of the year. Reducing methane emissions in grazing cattle in northern Australia is particularly challenging, as delivery of feed additives which reduce emissions is difficult. Selective breeding for lower methane emissions is perhaps the most promising strategy for the northern grazing herd. This project will develop genomic estimated breeding values (GEBVs) for methane production; the core product to allow northern Australian beef cattle breeders to select for reduced greenhouse gas emissions. This GEBV will be underpinned by the measurement of 4,500 cattle for methane emissions across the Repronomics project, Brahman and Droughtmaster BIN projects, and two pastoral company herds, both BRREDPLAN recording. The cattle from these projects are from five important beef cattle breeds that account for more than 70% of the cattle produced in northern Australia. The valuable methane measurements will be combined with existing genotype data (collected in the respective projects) to form the genomic reference population to further enhance the product and allow for the genomic prediction of breeding values.

EAP – 'LESTR' – Level of emission saliva test for ruminants

Project code	P.PSH.2010	**Location**	National
Start date	4 January 2022	**Vendor**	The University of Queensland
End date	1 June 2026	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This emissions avoidance partnership (EAP) project which sits in the additives product group, will develop a tool that can be used to identify high and low methane emitting cattle and will identify different emissions profiles between pregnant and non-pregnant cows. The investment will enable producers to lower emissions by removing high methane emitters from their herds and will identify whether emissions attributed to pregnant cattle are currently overestimated. MLA should invest because the tool will lead to direct reductions in emissions (currently via the herd management method) and because potentially inaccurate carbon footprints applied to pregnant cattle may be overestimating industry emissions by approximately 3 million tonnes of CO_2e per year.

EAP – Genetic improvement pipeline to reduce methane and improve productivity in the Australian beef industry

Project code	P.PSH.2012	**Location**	National
Start date	15 December 2021	**Vendor**	University of New England
End date	15 December 2026	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project addresses the need for a permanent and cumulative strategy for minimising GHG emissions and the need to consider methane production in genetic breeding programs to prevent increasing GHG emissions (by ~5MT CO_2e in 20 years) from beef cattle. MLA is developing estimated breeding values (EBVs) for methane production, so Australian beef cattle producers can select for naturally low methane-producing animals. Through investing in this project, MLA is seizing a rare opportunity to use existing resources (the Southern Multi-Breed (SMB) and Angus Beef Information Nucleus (BIN) projects) for which genetic performance is already measured (P.PSH.1261 and P.PSH.1172) to develop a genomic reference population for methane that will increase the value of individual projects and lead to an approximate 1MT CO_2e reduction by 2025 and 2.5MT CO_2e reduction by 2030.

Grainfed cattle

Completed R&D projects

Feedlot productivity

Update of Feedlot R&D evaluation model

Project code	B.FLT.7028	**Location**	National
Start date	1 June 2021	**Vendor**	RM Consulting Group
End date	1 June 2022	**Funding source**	Levy
Publication date	*17 January 2023*	**Initiation of research**	Industry
This project undertook further updates of the Feedlot R&D evaluation model to incorporate MLA evaluation framework requirements and make the model available in a format that is consistent with MLA's M&E evaluation framework. Over the past year, RMCG and the MLA Feedlot team updated and streamlined the Feedlot R&D evaluation model to align it with current market segments and production data for these market segments.			

The effect of lairage duration on carcase quality, yield and microbiological status

Project code	B.FLT.4017	**Location**	National
Start date	15 July 2021	**Vendor**	Bovine Dynamics
End date	9 March 2023	**Funding source**	Levy
Publication date	*23 August 2023*	**Initiation of research**	Industry
This project followed on from a successful pilot study (B.FLT.4002) funded by MLA and aimed to determine if reduced lairage duration improves carcase yield, meat quality and animal welfare at a commercial scale. The pilot study demonstrated that a shorter duration of lairage, involving transport and slaughter on the same day increased carcase yield and quality with an economic benefit of at least $20 per head.			

Regulatory requirements and risk assessment framework for use of automated vehicles in feedlots

Project code	B.FLT.1020	**Location**	National
Start date	1 July 2021	**Vendor**	ARRB Group LTD
End date	29 December 2022	**Funding source**	Levy
Publication date	*28 February 2023*	**Initiation of research**	Industry
This project addressed the need to develop the appropriate risk assessment framework for the incorporation of autonomous vehicles in feedlots – a new and emerging field. There is a need to develop the appropriate risk assessment framework for the incorporation of these technologies into the operation of feedlots. Using the MLA Bunk Bot as a test case, this project engaged Australian Road Research Board Limited (ARRB) which is the National Transport research organisation. ARRB have been involved in establishing a framework for the use of autonomous vehicles on private and public roads with various state regulatory authorities in Australia.			

Candidate compound testing in a methanogen model

Project code	B.FLT.5014	**Location**	National
Start date	18 March 2022	**Vendor**	CSIRO
End date	30 April 2023	**Funding source**	Levy
Publication date	*14 February 2024*	**Initiation of research**	Industry

This project contributed towards the carbon neutral by 2030 (CN300 goal and the need to reduce enteric methane emissions from ruminants. A previous project (B.FLT.5007) developed several compounds to block one of the key steps of the methanogenesis pathway. The candidate compound demonstrated inhibition of a key enzymatic pathway and this project aimed to validate those inhibition results using a representative methanogen model. Various concentrations were tested, with methane production and H2 utilisation measured to establish if the lead compound is capable of slowing down or blocking the production of methane.

Feedlot career development and training strategy – Cattle transport course

Project code	B.FLT.8206	**Location**	National
Start date	1 February 2022	**Vendor**	Canopi Online; Savv-e
End date	30 April 2023	**Funding source**	Levy
Publication date	*14 February 2024*	**Initiation of research**	Industry

This project involves MLA and the Australian Lot Feeders' Association (ALFA) collaboratively executing a Feedlot career development and training pathway. ALFA has identified that training in 'cattle transport' is a high priority. Livestock teams have high staff turnover that produces costs through re-training and productivity losses by new staff whilst they reach a competency level. This project developed a total of seven modules covering cattle transport in 'Sub project 3 – Development of core feedlot training materials' for the Feedlot career development and training pathway.

Product development and innovation lead finding training

Project code	B.FLT.7031	**Location**	National
Start date	1 February 2022	**Vendor**	?
End date	30 May 2023	**Funding source**	Levy
Publication date	*8 June 2023*	**Initiation of research**	Industry

This project delivered a one-day workshop for RDA program and project managers by Veterinary Health Innovation on due diligence in innovation opportunity lead finding. In addition, consulting advice on due diligence for potential leads and product development cycles was delivered to MLA as requested.

Sustainability (on-farm)

Efficacy and safety of Asparagopsis extract in a canola oil carrier for feedlot cattle

Project code	P.PSH.1351	**Location**	National
Start date	1 December 2021	**Vendor**	Future Feed
End date	28 February 2023	**Funding source**	MLA Donor Company
Publication date	*16 May 2023*	**Initiation of research**	External partnership

This project focused on the efficacy and safety of Asparagopsis extract in a canola oil carrier for feedlot cattle. Initial commercialisation efforts for Asparagopsis in feedlot cattle have focused on developing freeze-dried Asparagopsis. Currently, there is a high cost associated with freeze-drying the product to preserve the stability of the active bromoform. The next generation of products may involve extracting the active compounds from fresh Asparagopsis and value-adding the byproduct. The project aimed to provide critical knowledge on the methane reduction efficacy and safety of Asparagopsis extract in a canola oil carrier, and to elucidate the minimum effective inclusion level in feedlot diets. The fully controlled study involved 20 Angus steers in individual pens to allow for precision measurement of dry matter intake (DMI) and employed respiration chamber measurement of emissions from individual steers. Detailed assessment of meat quality, residues in meat and edible offal, and rumen necrospy were completed.

R&D projects in progress

Feedlot productivity

Feedlot cattle heat load forecasting market research

Project code	B.FLT.4019	**Location**	National
Start date	2 May 2022	**Vendor**	Weather Intelligence
End date	3 July 2023	**Funding source**	Levy
Initiation of research	Industry		

This project undertook market research to understand if a viable commercial model or alternative funding sources (external to MLA) could underpin the operation of the cattle heat load forecasting service.

Covered housing systems – Best practice management guidelines

Project code	B.FLT.4018	**Location**	National
Start date	15 April 2022	**Vendor**	Talona Evermore
End date	29 December 2023	**Funding source**	Levy
Initiation of research	Industry		

This project will deliver a best practice design and management guide for covered feedlot housing systems in Australia. The guide is comprehensive, illustrated with schematic drawings, photos and case studies and was delivered within 12 months of project commencement.

Te Pari Auto-handler Australian feedlot demonstration site

Project code	B.FLT.1021	**Location**	National
Start date	1 November 2022	**Vendor**	Te Pari Products
End date	30 August 2024	**Funding source**	Levy
Initiation of research	Industry		

This project will demonstrate the Te Pari Auto-handler prototype (developed in MLA Project B.FLT.1013 in New Zealand) within an Australian commercial feedlot to establish a value proposition for the system. The prototype automates animal capture, chin lift, drench backline application and subcutaneous injection. The demonstration will operate over a twelve-month period, with a minimum of 100 head being processed through the system per week. Processing rate, labour units, veterinary medicament use, inventory shrink, animal welfare metrics and repairs and maintenance will be reported.

Evaluation of partial pen coverage with shelter in a commercial feedlot

Project code	B.FLT.4020	**Location**	National
Start date	1 July 2022	**Vendor**	Bovine Dynamics
End date	5 September 2024	**Funding source**	Levy
Initiation of research	Industry		

This project addresses the increasing interest in the adoption of covered housing by the Australian lot feeding industry. Provision of shelter has the ability to improve cattle performance, health and welfare by removing rainfall from the pen area and providing an area for cattle in inclement weather. This project will evaluate the effect of differing shelter area per animal on these parameters. The project will evaluate shelter options that can be retrofitted to existing unshaded feedlot pens as an option for Australian feedlots looking to install shade or shelter in the future.

Next generation autogenous vaccines for prevention of bovine respiratory disease in Australian feedlots

Project code	P.PSH.1357	**Location**	National
Start date	3 January 2022	**Vendor**	University of Adelaide
End date	1 December 2026	**Funding source**	MLA Donor Company
Initiation of research	Industry partnership		

This project will confirm the role of Bovine respiratory disease (BRD) pathogens as causative agents of disease as well as develop and test next generation autogenous vaccines to control the main bacterial causes of BRD in Australian feedlots. BRD is the main cause of morbidity, mortality and antimicrobial usage on feedlots and impacts the health, welfare and productivity of cattle.

Evaluation of Bovaer® in Australian long-fed Wagyu cattle

Project code	P.PSH.1454	**Location**	National
Start date	3 April 2023	**Vendor**	DSM Nutritional Products AG
End date	20 September 2024	**Funding source**	Levy
Initiation of research	Industry		

This project will evaluate the effect of Bovaer®10 on greenhouse gas emissions of long-fed Wagyu cattle in Australia. The greenhouse gas emissions of cattle fed on differing concentrations of Bovaer-10 will be evaluated using respiratory calorimeters. A life cycle analysis will be performed to determine the impact of adoption of methane reducing feed additives on whole of life emissions.

Effect of short duration lairage on ante-mortem inspection, carcase characteristics, and microbiological status of feedlot cattle during winter conditions

Project code	B.FLT.1022	**Location**	National
Start date	15 June 2023	**Vendor**	University of New England
End date	30 December 2025	**Funding source**	Levy
Initiation of research	Industry		

This project will assess the effect of short duration lairage on ante-mortem inspection, carcase characteristics, and microbiological status of feedlot cattle during winter conditions across domestic, short-fed export and long-fed export market categories. In total, across all three market categories, a minimum of 6,000 head of cattle will be compared under normal lairage (16 to 24 hours) and short lairage (two to four hours) duration in a randomised block design.

Automation of feedlot cattle wellbeing monitoring – Partnership

Project code	P.PSH.1458	**Location**	National
Start date	1 May 2023	**Vendor**	JBS Australia Pty Ltd
End date	15 June 2025	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project will conduct market research for commercial 'off-the-shelf technologies' for automation of feedlot cattle wellbeing monitoring. Based on target attributes, business case and feasibility, five novel technologies will be selected for feedlot commissioning and evaluation. The most feasible candidates will progress to randomised, replicated pen-based evaluation to evaluate the value proposition for the adopting feedlot. Finally, if technologies are deemed viable, data feeds will be integrated into a feedlot dashboard to obtain insights for feedlot cattle wellbeing management.

Veterinary feed additive safety program for the Australian feedlot industry

Project code	B.FLT.4022	**Location**	National
Start date	16 April 2023	**Vendor**	Integrated Animal Production
End date	30 April 2025	**Funding source**	Levy
Initiation of research	Industry		

This project will implement a veterinary feed additive safety program for the Australian feedlot industry, and a program of research with liquid supplements to develop best practice guidelines for their management.

Guidelines for feedlot cattle staging facilities

Project code	B.FLT.5016	**Location**	National
Start date	1 February 2023	**Vendor**	AgDSA
End date	1 March 2025	**Funding source**	Levy
Initiation of research	Industry		

This project will develop guidelines for feedlot cattle staging facilities. In the context of the Australian lot feeding industry, staging refers to the grouping and acclimatisation of animals prior to entry into a feedlot or intensive finishing system. Staging is an increasingly common practice and different sectors of the Australian cattle industry utilise staging in different ways. If properly defined, sited, designed and managed, it can have significant production and health benefits. However, there is currently a lack of industry guidance on how cattle staging facilities adjacent to feedlots should be designed and managed to limit their environmental impact. The main motivation for development of these guidelines is to manage the risks of this practice, taking into consideration; animal welfare, environment, biosecurity, sustainability and public perception, and as an opportunity to ensure the long-standing reputation and credentials of the Australian lot feeding industry are maintained and strengthened into the future.

Innovation capability building

Smithfield Cattle Company Collaborative Co-Innovation program

Project code	P.PSH.1384	**Location**	Queensland
Start date	15 October 2021	**Vendor**	Smithfield Pastoral Company Pty Ltd
End date	30 October 2025	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project involves the Smithfield Cattle Company who have agreed to commence a Collaborative Co-Innovation strategy program with MLA over a three-year period commencing October 2021. The focus of the program will be to support the development of Smithfield Cattle Company growth strategies to be achieved via the development of innovation capability in the following areas; feedlot digital innovation and infrastructure, antimicrobial stewardship, sustainability and environmental stewardship (CN30), animal health, welfare and genetic improvement.

Livestock genetics

Genetics R&D: Wagyu Net Feed Intake (NFI) data collection and analysis

Project code	P.PSH.0848	**Location**	National
Start date	15 April 2017	**Vendor**	Australian Wagyu Association
End date	7 October 2023	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project followed AWA's proposal to establish an additional BIN model that would allow the nomination of test sires and their cohorts of commercial progeny to be NFI tested and slaughtered and the data submitted to BREEDPLAN for analysis. NFI was measured to determine individual feed efficiencies necessary for the cost effective feeding of long-fed Wagyu cattle. Two production pens at Kerwee feedlot were fitted with GrowSafe feeders, with each pen capable of feeding 90 head. Two production pens at Kerwee feedlot were fitted with GrowSafe feeders, with each pen capable of feeding 90 head so 180 animals could be fed under NFI test conditions in a single test intake. The induction and NFI testing period currently totals 100 days, so the pens have the capacity to run three feed test intakes each year totalling 540 animals, providing significant capability for Wagyu sire testing.

Sustainability (on-farm)

Effect of Bovaer® on performance, health, carcase characteristics and carbon footprint of Australian feedlot cattle

Project code	P.PSH.1375	**Location**	National
Start date	15 February 2022	**Vendor**	Whyalla Beef
End date	15 November 2023	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project aimed to determine the feedlot performance, health and carcase characteristics effects of Bovaer® under large scale commercial feedlot conditions. A cost-benefit for feedlot profit/loss was calculated on financial closeouts for all trial lots. The full carbon footprint of experimental treatments was determined. Based on this information, the cost of development and verification of a carbon project accessing either domestic or global standards was projected. Potential carbon credit revenue if available, was projected at current market rates.

Effect of Asparagopsis extract in a canola oil carrier for long-fed Wagyu cattle

Project code	P.PSH.1353	**Location**	National
Start date	1 February 2022	**Vendor**	Future Feed; University of New England
End date	11 December 2023	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project aimed to determine the effect of Asparagopsis extract oil in a canola oil carrier for long-fed Wagyu cattle and publish the results. This includes evaluation of the product's effect on methane production, animal health, carcase traits, food safety and eating quality.

Grassfed and grainfed cattle

Completed R&D projects

Animal wellbeing

Product development of an Australian trichomoniasis vaccine: Pilot trial

Project code	P.PSH.1368	**Location**	National
Start date	30 Aug 2021	**Vendor**	The University of Queensland
End date	1 Feb 2022	**Funding source**	MLA Donor Company
Publication date	*15 November 2023*	**Initiation of research**	External partnership
This project's study aimed to evaluate a T. foetus killed vaccine in a pilot trial to demonstrate efficacy and safety of vaccination of beef bulls against trichomoniasis. Trichomoniasis is a venereal disease of cattle recently confirmed to be prevalent in northern Australian beef herds (approximately one in ten culled bulls were infected). Although a 'vaccine' was developed by CSIRO researchers in Australia in the 1980s, it was not commercialised because trichomoniasis was not considered to be widespread in southern Australia, especially in dairy herds. However, since the adoption of T. foetus quantitative PCR methods approximately 12 years ago, it has become apparent that trichomoniasis is prevalent in northern beef herds and the development of an Australian vaccine has become a research priority. A commercial product 'TrichGuard' is available in the USA and is produced similarly to the previously developed Australian vaccine. Due to Australian quarantine conditions, the importation of this product is not possible. These vaccines are developed with killed T. foetus protozoa sourced locally to produce optimal efficacy.			

Eating quality

Event co-ordination for 2019 MSA EEQ series and Beef Industry Breakfasts (2019–2020)

Project code	B.GBP.0046	**Location**	National
Start date	30 July 2019	**Vendor**	Jackie Kyte Conferences and Events
End date	30 December 2021	**Funding source**	Levy
Publication date	*1 July 2022*	**Initiation of research**	Industry
This project involved a consultant being responsible to the MLA program managers (grassfed beef and MSA) to support industry engagement and awareness activities as directed. Specifically, the consultant worked directly with MLA staff across programs within Producer Consultation and Adoption to provide administrative support, and promote, manage and coordinate the delivery of events that engage directly with industry.			

Development of app for beef carcase grading by camera technologies

Project code	L.MSG.2110	**Location**	National
Start date	21 December 2020	**Vendor**	Management for Technology Pty Ltd
End date	15 June 2021	**Funding source**	Levy
Publication date	*2 February 2024*	**Initiation of research**	Industry
The purpose of this project was to enable beef grading to be conducted by industry endorsed objective camera technologies and interface with existing MSA systems.			

Design of Livestock language guidelines

Project code	L.MSA.2207	**Location**	National
Start date	8 October 2021	**Vendor**	GSM Press Pty Ltd
End date	31 May 2022	**Funding source**	Levy
Publication date	*18 January 2024*	**Initiation of research**	Industry
This project's purpose was to professionally design the draft *National bovine livestock language guidelines* so that it could be finalised and presented to the Australian Meat Language and Standards Committee for endorsement, before being published online.			

MSA EEQ Awards case studies

Project code	L.MSA.2204	**Location**	National
Start date	21 June 2021	**Vendor**	Cox Inall Communications
End date	15 May 2022	**Funding source**	Levy
Publication date	*17 January 2024*	**Initiation of research**	Industry
This project involved the MSA Excellence in Eating Quality producer awards which are conducted biennially and receive a high level of media attention. Case studies of the winners were constructed by the consultant to be used in media releases across industry and for MSA content over an extended period of time.			

MSA EEQ Awards case study videos

Project code	L.MSA.2205	**Location**	National
Start date	1 September 2021	**Vendor**	Cox Inall Communications
End date	30 June 2022	**Funding source**	Levy
Publication date	*24 January 2024*	**Initiation of research**	Industry
This project involved the MSA EEQ awards which were held towards the end of 2021 and early 2022. The series recognised the top performing MSA producers in each state for the 2019–20 and 2020–21 financial years. This project involved the production of video case studies of each of the award winners.			

Event coordination of 2021 MSA EEQ Series

Project code	L.MSA.2000	**Location**	National
Start date	1 June 2021	**Vendor**	Jackie Kyte Conferences and Events
End date	15 December 2022	**Funding source**	Levy
Publication date	*24 January 2024*	**Initiation of research**	Industry
This project funded a consultant to provide event support services for the 2021 MSA Excellence in Eating Quality Series – a biennial initiative consisting of six state-based events across mid-September to early October. Each event is comprised of a producer forum, followed by an awards presentation.			

Technical support for MSA research and development

Project code	L.EQT.2202	**Location**	National
Start date	20 September 2021	**Vendor**	Strategic Bovine Services
End date	30 March 2023	**Funding source**	Levy
Publication date	*17 January 2024*	**Initiation of research**	Industry
This project supported this consultancy agreement whose purpose is to provide project and study design consultation as well as statistical support for MSA research and development, as directed by authorised MSA personnel.			

High Value Food Frontiers

Kilcoy Global Foods (KGF) nutraceutical strategy

Project code	P.PIP.0591	**Location**	Queensland
Start date	10 December 2021	**Vendor**	Kilcoy Global Foods
End date	12 June 2023	**Funding source**	MLA Donor Company
Publication date	*18 October 2023*	**Initiation of research**	Commercial partnership
This project aimed to complete a full review of the Kilcoy low value red meat supply chain so that all additional value add opportunities could be identified and evaluated to better understand the role that Australian red meat can play in this nutraceutical sector. As of 2020, the global nutraceutical market was valued at US$320 billion. Proof of concepts and capacity modelling were completed with these findings captured and documented in a business model canvas so that potential next steps could be easily identified and articulated. An assessment of the addressable nutraceutical market was also a completed deliverable of this project (from the lens of processor-supply perspective).			

Innovation capability building

Pardoo Beef building a sustainable Wagyu operation

Project code	P.PSH.1349	**Location**	Northern Australia
Start date	15 November 2021	**Vendor**	Pardoo Beef Corporation
End date	15 November 2022	**Funding source**	MLA Donor Company
Publication date	*29 November 2023*	**Initiation of research**	External partnership
This capability project developed the Pardoo sustainability strategy, designed and developed a carbon neutral Wagyu brand strategy and an industry-first enterprise level sustainability dashboard.			

Livestock genetics

National Bovine Livestock Language Guidelines – eLearning platform development

Project code	L.GEN.0004	**Location**	National
Start date	26 July 2023	**Vendor**	AUSMEAT Ltd
End date	28 February 2024	**Funding source**	Levy
Publication date	*11 July 2024*	**Initiation of research**	Industry
This project's objective was to deliver an eLearning package to support extension and adoption of the National Bovine Livestock Language Guidelines, that were released to industry in 2022 and are to be housed under the auspices of Australian Meat Industry Language and Standards Committee (AMILSC).			

Market access science

Planning the commercialisation of DTS: Diathermic Syncope® stunning technology

Project code	P.PIP.0587	**Location**	National
Start date	25 August 2021	**Vendor**	Wagstaff Food Services
End date	16 February 2023	**Funding source**	MLA Donor Company
Publication date	*31 May 2023*	**Initiation of research**	Commercial partnership
This project's purpose was to assist the MDC Partner to develop an acceptable business plan, as required by the commercialisation agreement and to examine the routes to market adoption that will best ensure return on investment and balance the religious and animal welfare sensitivities between existing and new technology. Diathermic Syncope®, or DTS stunning, is a new method of reversible stunning for cattle that has been developed, primarily through MDC funding. MLA has an interest in the development of the broader adoption plan as we advocate for the best industry outcome.			

Whole of beef supply chain waste mapping and interventions

Project code	V.MFS.0457	**Location**	National
Start date	15 June 2021	**Vendor**	Fight Food Waste Limited
End date	27 June 2023	**Funding source**	Levy
Publication date	*29 November 2023*	**Initiation of research**	Industry
This project is similar to the WRAP meat waste reduction strategies from the UK which saved the Pork value chain $800k, and Hilton Foods UK, which reduced 439 tons of waste. It involved participants actively measuring waste in the supply chain and implementing interventions. The project also contributed to the objective of finding new sources of revenue, meeting sustainability goals and informing the High Value foods program on alternative waste steams which may be transformed. In addition, the project aimed to foster further trust and collaboration between industry partners along the supply chain.			

Refining the ability of livestock industries to mitigate antimicrobial resistance risks through improved biosecurity

Project code	V.MFS.0461	**Location**	National
Start date	1 February 2022	**Vendor**	Agrifutures
End date	30 June 2023	**Funding source**	Industry
Publication date	*6 May 2024*	**Initiation of research**	Industry

This project aimed to enhance the adoption of antimicrobial stewardship and antimicrobial resistance mitigation strategies by Australian livestock producers through producing tools that can be used to improve biosecurity practices, which ultimately improve market opportunities and the social licence for Australia's livestock industries.

Objective measurement

Design and scoping of fully integrated objective measurement module including yield and cut weights prediction (Phase 1)

Project code	P.PSH.1413	**Location**	National
Start date	21 August 2022	**Vendor**	Australian Country Choice
End date	31 May 2023	**Funding source**	MLA Donor Company
Publication date	*8 May 2024*	**Initiation of research**	External partnership

This project aimed to develop a prototype design and work schedule for the development and evaluation of a fully integrated objective measurement (OM) modular solution for implementation in beef processing. Specifically, this project aimed to design a fully integrated OM data capture area on the beef processing slaughter floor prior to the chillers to enable current and emerging OM technologies to be collectively housed and implemented to measure valued hot carcase quality and yield attributes. This initial phase 1 design and scoping work will be used to inform an expanded proposal to develop an objective measurement modular solution. A specific focus of the design of the carcase measurement room will be on the first Frontmatec's Beef Classification Centre (BCC-3TM) prototype installation in beef processing for objective carcase grading and yield prediction to enable validation of predicted yield and cut weights in Australia. This project aimed to produce a blueprint, including guidelines and costings, of how a beef processor can implement a fully integrated carcase compliance measuring system using OM data to enable pre-chiller sortation and allocation in saleable product markets to optimise value and profitability.

Masterbeef app development to enable data integration into red meat processor systems

Project code	P.PSH.1362	**Location**	National
Start date	20 February 2022	**Vendor**	Masterbeef
End date	30 September 2023	**Funding source**	MLA Donor Company
Publication date	*9 July 2024*	**Initiation of research**	External partnership

This project aimed to roll out the Masterbeef app and grading camera solution with integration into JBS's northern operations' workflows and business data management systems within their local and cloud-based IT systems. Whilst many of the required database and API interface functions have been designed and built on the Masterbeef solution, this project will require additional beta testing and tailored solutions for third party first class integrations to deliver a commercial grading application solution. The outcomes of the project will be critical for the concurrent JBS northern early adoption project. This project was a successful application from the 2021 Objective Measurement (OM) open call for proposals targeting the increased adoption of OM technologies.

Evaluating the implementation and early adoption of Frontmatec technology for integration in beef grading

Project code	P.PSH.1360	**Location**	National
Start date	1 March 2022	**Vendor**	JBS Australia Pty Ltd
End date	2 October 2023	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project's primary aim was to integrate the Frontmatec grading camera into the JBS Southern Division processing plants, thereby enabling streamlined data integration into their systems, improving analysis of carcase traits for more consistent and accurate feedback to producers. This will drive producer engagement with brand specs and improve genetic gain leading to improved livestock selection for JBS to better meet brand and product specifications. This project was a successful application from the 2021 Objective Measurement (OM) open call for proposals targeting the increased adoption of OM technologies. General learnings from this project will be used to develop generic guidelines for adoption and integration of new OM technologies.

Design a proof-of-concept 3D-Metrix camera-based solution for live animal measurement in beef feedlots (Phase 1)

Project code	P.PSH.1471	**Location**	National
Start date	31 March 2023	**Vendor**	3D-Metrix Agriculture Pty Ltd
End date	30 June 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

The overall objective of this project was to develop the proof-of-concept design for a fully integrated solution based on 3D-Metrix's suite of systems and capabilities for the objective measurement of live animal performance and carcase traits. This solution included linking and accumulating data for the life of the animal through to carcase enabling timely and better informed management and utilisation decisions. The primary benefit is expected to be that data captured using objective measurements from live animals can contribute to 'whole of life' validation and used to create additional value through carcase compliance.

R&D projects in progress

Animal wellbeing

mRNA technology to rapidly produce vaccines for emergency diseases of animals especially lumpy skin disease

Project code	P.PSH.1400	**Location**	National
Start date	15 June 2022	**Vendor**	NSW DPI
End date	1 August 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project addresses lumpy skin disease (LSD) – an infectious viral disease of cattle, spread by biting insects, that causes morbidity and significant production loss. The disease originated in Africa and has now spread through Asia to Indonesia. Most experts agree that a disease incursion into Australia is inevitable. Modelling has suggested that there would be a minimum A$3.2B impact in terms of annual gross value of production. NSW DPI (Elizabeth Macarthur Agricultural Institute – EMAI) will partner with Tiba Biotech in the USA to develop an mRNA vaccine construct pipeline that will enable capacity for rapid mass production of a vaccine for LSD in the event of an outbreak. The project will deliver an mRNA vaccine construct for LSD that can be rapidly upscaled for mass production, with associated efficacy testing and a mapped pathway to Australian Pesticide and Veterinary Medicine Authority registration.

Eating quality

Technical support for MSA R&S (Scibus)

Project code	L.EQT.2305	**Location**	National
Start date	1 October 2022	**Vendor**	Strategic Bovine Services
End date	30 September 2024	**Funding source**	Levy
Initiation of research	Industry		

This project involves a consultancy agreement whose purpose is to provide project and study design consultation as well as statistical support for MSA research and development, as directed by authorised MSA personnel for the next two years.

The effect of red Asparagopsis oil on the eating quality of long-fed cattle

Project code	L.EQT.2306	**Location**	National
Start date	30 January 2023	**Vendor**	University of New England
End date	30 April 2024	**Funding source**	Levy
Initiation of research	Industry		

This project aims to determine the eating quality effect of feeding Asparagopsis extract oil in a canola oil carrier for long-fed Wagyu cattle.

Growing Beef from Dairy

Project code	L.EQT.2111	**Location**	Queensland; NSW; Victoria; Tasmania
Start date	30 May 2022	**Vendor**	AgStar Projects
End date	30 November 2027	**Funding source**	Dairy Australia; Levy
Initiation of research	Industry		

This project addresses the issues around the management of surplus dairy calves ('bobby calves') which present a particular challenge for producers due to their often-low monetary value, a lack of on-farm infrastructure to rear them, as well as the high cost and the requirement for additional skilled labour associated with their management. This often-low value results in many calves being managed through early life slaughter pathways. This is turn poses significant risks to animal welfare. In the past, dairy calves have been grown out as steers (carcase ~300kg) and sold as beef however were often considered poor quality, low muscled and discounted. Given the current beef cattle shortage, some enterprises are finishing these animals well and have targeted dairy-dominant feedlots and meat products. Viable dairy beef supply chains exist in Australia, with further expansion in this area often limited by lack of confidence, knowledge and ability for processors to slaughter a tall frame carcase. The primary knowledge gap that exists is the adoption of best practice preparation of surplus dairy calves from birth to weaning for turnoff into the beef supply chain (feedlot or processing).

Impact of red Asparagopsis oil on the eating quality of mid-fed cattle

Project code	P.PSH.1437	**Location**	National
Start date	1 December 2022	**Vendor**	Rangers Valley Cattle Station; The University of Queensland
End date	29 February 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project will aim to:

- Determine the impact of feeding red Asparagopsis infused oil on the meat quality of mid fed beef (150 days)
- Determine the impact of feeding red Asparagopsis infused oil on the post-mortem ageing potential of meat from mid fed beef (150 days).

Feedlot productivity

Reducing emissions of backgrounded cattle – combining Bovaer®10 with supplementation to reduce methane and increase productivity

Project code	B.FLT.5015	**Location**	National
Start date	2 May 2022	**Vendor**	The University of Queensland
End date	3 June 2024	**Funding source**	Levy
Initiation of research	Industry		

This project will evaluate the product Bovaer®10 (3-NOP by DSM) in combination with a grain-based supplement for use in cattle backgrounding production systems to reduce methane emissions and increase productivity of the animals in the phase from weaning to feedlot entry, or, joining in the case of retained heifers. It will also serve as a model for integration with slow release forms of the active ingredient as they become commercially available in future.

Evaluation of Bromet – a slow release bolus to reduce cattle methane emissions

Project code	P.PSH.1460	**Location**	National
Start date	31 March 2023	**Vendor**	CSIRO
End date	31 March 2026	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project will evaluate the effect of a novel methane inhibitor product, in the form of a slow release bolus, named Bromet by Ruminant Biotech on the emissions of pasture fed cattle. The first study will be a dose determination study to evaluate differing release rates of bromoform on methane and hydrogen emissions of cattle. The second study will select the bolus design with the optimal release rate and evaluate it over a period of up to five months to determine the long-term efficacy of the product. The second study will also evaluate the liveweight of animals with and without the bolus.

High value food frontiers

Fermented meat sauce – Proof-of-concept

Project code	P.PSH.1475	**Location**	National
Start date	26 July 2023	**Vendor**	AgResearch Ltd
End date	1 July 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project's investment will research and produce a proof-of-concept fermented ingredient from beef heart and lung to determine whether beef offal can be efficiently and safely fermented at a reasonable pace under simple conditions to form a tabletop condiment (such as a meat sauce).

Kilcoy Global Foods (KGF) Nutraceutical strategy – Phase 2

Project code	P.PSH.1472	**Location**	International
Start date	1 July 2023	**Vendor**	Kilcoy Global Foods
End date	31 December 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

The recently completed project, P.PIP.0591 Kilcoy Global Foods (KGF) Nutraceutical strategy, successfully identified and demonstrated the operational feasibility of harvesting organs and glands from the chain, at the viscera table or from the offal room. The team identified that the preparation for freeze-drying is no more onerous than when harvesting organs and glands for frozen sale. This phase two project will work on identifying, establishing relationships with and understanding the nutraceutical ingredient supply chain is required and should be the focus of subsequent projects. Identifying any local players would determine if local freeze-dried powder sales are possible or if sales must be to overseas markets in the Middle East, Europe and USA.

Jimmie's for Kids Beef Bites – Commercialisation opportunity

Project code	P.PSH.1411	**Location**	National
Start date	30 August 2022	**Vendor**	Jim's Jerky Unit Trust
End date	31 August 2023	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project sought to identify and support the opportunity spaces for Australian red meat in the kids and toddler food category by establishing the optimum adoption pathways for this segment that has traditionally had low red meat penetration. The project included case studies on current/potential usage channels, recipe finalisation and an in-market launch of the new product. Key findings will help lead potential discussion on adding high value to commodity red meat into this category of consumers in Australia.

Innovation capability building

Hewitt's ESG pathways for a vertically integrated organic supply chain

Project code	P.PSH.1426	**Location**	Central and Eastern Australia
Start date	1 January 2023	**Vendor**	Bush Heritage Australia; Greenfields Pty Ltd; Hewitt Cattle Australia Pty Ltd Integrity Ag and Environment Qld; Soil Land Food Pty Ltd
End date	28 February 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project by design, is both a quantification program and an adoption program, aiming to deliver emissions reduction, insetting and offsetting, biodiversity enhancement, natural capital improvements and regenerative agriculture implementation, leading into carbon and environmentally branded red meat products. Hewitt is pursuing significant sustainability, regenerative agriculture, and emission reduction opportunities for the supply chain, including potential to certify performance for marketing purposes. To achieve these goals, a multiphase approach has been developed, encompassing both research and adoption elements. It will be the first program in Australia covering all these elements at this scale that will deliver practical adoption outcomes across a supply chain through central and eastern Australia.

Bindaree Food Group Co-Innovation manager

Project code	P.PSH.1412	**Location**	NSW
Start date	1 August 2022	**Vendor**	Bindaree Food Group
End date	26 December 2025	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project supports a Co-Innovation program manager to scope, develop and implement the high value product innovation strategy at Bindaree Food Group to assist the business build the capability required to differentiate their offer and become a trusted source of high-quality protein, capturing additional long-term value for the business in domestic and international markets.

Argyle Foods Group carbon neutrality Co-Innovation program manager

Project code	P.PSH.1331	**Location**	National
Start date	1 October 2021	**Vendor**	Lachlan Graham
End date	30 April 2025	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

The project addresses the lack of innovation capability across industry to address greenhouse gas (GHG) management interventions as outlined in the industry CN30 Roadmap. MLA should invest in this project as it presents an opportunity to explore, pilot and scale GHG management interventions in a mid-size supply chain operating in a temperate climate region of the Australian red meat industry.

Livestock genetics

Alternative reproductive technologies II – Semi automated embryo transfer device and immature follicle maturation

Project code	P.PSH.1407	**Location**	National
Start date	1 July 2022	**Vendor**	NBRYO; Nindooinbah
End date	15 June 2025	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project will improve reproductive technologies through automation and simplification of current commercial embryo transfer practices, procedures and technology and utilise follicle maturation techniques to increase production of oocytes available for in vitro fertilisation (IVF) and embryo development. The project addresses the opportunity to improve reproductive rates in cattle using more effective embryo transfer (ET) technologies adapted from human technology, resulting in higher pregnancy success and could be the standard breeding method for commercial producers.

Northern genomics commercialisation scoping study

Project code	P.PSH.1422	**Location**	Northern Australia
Start date	30 July 2022	**Vendor**	The University of Queensland
End date	1 May 2025	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

The Northern Genomics project (P.PSH.0833) is successfully developing genomic breeding values (GBV) for fertility, growth and adaptation traits including tick resistance and buffalo fly lesion score. This project focuses on the production of low cost GBV, along with other products, including herd genetic profiles from DNA pooling to test a commercialisation pipeline. The project was co-funded by producers, contributing through genotype purchases.

Market access science

DTS: Diathermic Syncope®: revision of dossier for regulatory assessment in the EU

Project code	P.PSH.1493	**Location**	International
Start date	1 October 2023	**Vendor**	Wagstaff Food Services Pty Ltd
End date	30 April 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project relates to the DTS: Diathermic Syncope® technology (DTS) for stunning of cattle which has been developed and provides consistent induction of insensibility at the time of slaughter. A number of previous reports and peer-reviewed articles provide validation of the technology's ability to provide for animal welfare and humane slaughter. For DTS to be commercialised, it must be approved for use by the Competent Authority in the countries in which the technology is to be used, and in some countries to which Australian product, stunned by this method, is to be exported.

Antimicrobial usage – Development of data collection and metrics for beef

Project code	V.MFS.0002	**Location**	National
Start date	1May 2022	**Vendor**	AgVet Projects Pty Ltd
End date	15 November 2024	**Funding source**	Levy
Initiation of research	Industry		

This project will develop a framework and business case for a beef industry antimicrobial use integrity system. A top-down approach using APVMA sales data, and a bottom-up approach from on-farm usage will be explored. For both approaches a methodology will be documented to produce an unbiased aggregated estimate of usage for the beef supply chain. At the conclusion of the project the MLA supply chain taskforce will make a decision on implementation.

Objective measurement

Evaluating objective measurement using MEQ Live to measure marbling in live animals in a beef feedlot

Project code	P.PSH.1464	**Location**	National
Start date	31 March 2023	**Vendor**	Stockyard Lot Feeders Pty Ltd
End date	15 December 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project aims to develop and evaluate the commercial installation of an 'ultrasound-based' device that will be compared with 'whole of life' data including carcase performance data captured post-slaughter. The ability of the MEQ Live device to deliver a point-in-time measurement for marbling will allow for an in-depth investigation into the rate of marbling and growth over the production cycle of the animal. Specifically, the device will be trialled at a beef feedlot and quantified to measure and predict marbling performance periodically throughout the various feeding programs across multiple cattle types that will be compared with 'whole of life' data including carcase performance data captured post-slaughter. The primary benefit is expected to be that data captured using objective measurements from live animals can contribute to 'whole of life' validation and used to create additional value through carcase compliance.

Early adoption and integration of hot carcase marble measurement in beef processing

Project code	P.PSH.1427	**Location**	National
Start date	21 November 2022	**Vendor**	Australian Meat Group
End date	10 June 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project aims to deliver an early adoption and integration of an objective measurement (OM) device and mobile application (App) to measure hot beef carcase marble score to improve accuracy and consistency compared to current visual grading methods. This project will develop operating protocols to enable adoption of a grading solution using the hot carcase marble measure for future adopters. Specifically, the project will evaluate the integration of the Meat Eating Quality (MEQ) hot beef grading solution and App into a beef processor's workflow and business data management systems, including feedback to producers. General learnings from this project will be used to develop generic guidelines for adoption and integration of new OM technologies.

Application of Marbl™ to live cattle IMF measurement – Proof-of-concept

Project code	P.PSH.1449	**Location**	National
Start date	15 March 2023	**Vendor**	InMR Measure Limited
End date	31 January 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project aimed to design, build and evaluate the proof-of-concept application of the Marbl™ technology to measure % IMF in live cattle. In this project a Marbl™ sensor was designed and built to a specification that will be purpose-built for feedlots and other crush side applications to integrate seamlessly into existing operations. Specifically, the device will be trialled at a beef feedlot and other crush side applications and quantified to measure and predict marbling performance that will be compared with whole of life data including carcase performance data captured post-slaughter. The proposition will be to use live animal measures, such as the marble score prediction using the Marbl™ sensor device, to predict turn-off potential and assist with pen sortation and allocation of animals crush side during feedlot induction. The primary benefit is expected to be that data captured using objective measurements from live animals can contribute to 'whole of life' validation and used to create additional value through carcase compliance. Further work will be required beyond this project to progress the technology to a commercial solution.

Early adoption and integration of objective measurement of hot carcase marble traits in beef processing

Project code	P.PSH.1466	**Location**	National
Start date	31 May 2023	**Vendor**	John Dee Warwick
End date	31 March 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project aims to deliver an early adoption and evaluation of the Meat Eating Quality (MEQ) hot beef grading probe to measure hot beef carcase marble score to improve accuracy and consistency compared to current visual grading methods, including development work into the correlation of and intramuscular fat percentage [IMF%] to marble score. The project will further develop operating protocols to enable the adoption of a grading solution using the hot carcase marble measure for future adopters. Specifically, the project will evaluate the integration of the MEQ hot beef grading solution into a beef processor's workflows and business data management systems, including feedback to custom kill clients and producers.

Early adoption and integration of hot carcase marble and IMF% measurement and mobile solution in beef processing

Project code	P.PSH.1457	**Location**	National
Start date	31 May 2023	**Vendor**	Kilcoy Global Foods
End date	30 June 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project aims to deliver an early adoption and integration of an objective measurement device and mobile application (App) to measure hot beef carcase marble score to improve accuracy and consistency compared to current visual grading methods. This project will develop operating protocols to enable adoption of a grading solution using the hot carcase marble measure for future adopters. Specifically, the project will evaluate the integration of the Meat Eating Quality (MEQ) hot beef grading solution and App into a beef processor's workflows and business data management systems, including feedback to producers. General learnings from this project will be used to develop generic guidelines for adoption and integration of new objective measurement (OM) technologies.

Development and evaluation of carcase traits measurement on live animals for beef processing

Project code	P.PSH.1462	**Location**	National
Start date	31 January 2023	**Vendor**	Australian Country Choice Production Pty Ltd
End date	15 December 2023	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project sought to develop and evaluate the commercial installation of Meat Eating Quality (MEQ) live device to measure carcase traits on live animals. Specifically, the device was trialled at a beef feedlot and quantified to measure and predict marbling performance and was compared with 'whole of life' data including carcase performance data captured post-slaughter. The proposition was to use live animal measures, such as the marble score prediction using the MEQ live device, to predict turnoff potential and assist with pen sortation and allocation of animals crush side during feedlot induction. The ability of the MEQ live device to deliver a point-in-time measurement for marbling will allow for an in-depth investigation into the rate of marbling and growth over the production cycle of the animal.

Development of a producer feedback system integrating current and new data

Project code	P.PSH.1398	**Location**	National
Start date	2 May 2022	**Vendor**	Greenham Tasmania Pty Ltd
End date	30 August 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project developed a feedback system to enable analysis and visualisation of carcase trait and compliance data and allow it to be shared with cattle suppliers. The project involved building an interactive digital platform for Greenham suppliers with analytical capacity enabling visualisation of compliance outcomes as provided through extensive producer consultation and evaluation. Specifically, the project evaluated the integration of current grading and disease and defect compliance data into Greenham's workflows and business data management systems, including feedback to producers. The feedback system will be designed to integrate new compliance data, including objective measurement of carcase and live animal compliance that is currently being evaluated. This project's primary objective was to provide the meaningful supply chain feedback that will enable producers to identify opportunities for improvement that will have the greatest impact on farm profitability. This will drive producer engagement with brand specifications to improve genetic gain and on-farm profitability. General learnings from this project will be used to inform producer extension activities.

Evaluating a hyperspectral image analysis prototype for offal health and tissue integrity quality assurance for Australian red meat processing

Project code	P.PSH.1350	**Location**	National
Start date	21 November 2021	**Vendor**	Charles Sturt University
End date	29 August 2025	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project will develop a prototype offal health hyperspectral image capture system that can collect offal health data on the processing line in real-time, to partially automate offal health scoring in the abattoir and provide greater consistency, accuracy, and integrated traceability for offal products for Australian red meat processors, and enhanced feedback for producers. This project follows a preliminary project which confirmed the potential for hyperspectral imaging to increase the accuracy of capturing health, quality and contamination data in a single image.

Productivity (off-farm)

Nuctech DEXA CT system validation for beef chining automation

Project code	P.PSH.1418	**Location**	National
Start date	30 September 2022	**Vendor**	Nuctech Sydney Pty Ltd
End date	30 September 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project aims to support the future of beef boning development. It is proposed that Nuctech will carry out a series of testing using a CT machine to investigate and validate the ability of the device to generate high quality and accurate data for the automation system. Nuctech's DEXA CT machine has been selected to trial for the conceptual design and to examine the machine's capabilities. The main goal of this series of trials is to obtain enough information, validate assumptions, and gain confidence for the investment decision. The outcome of the phased testing will be demonstration of application of CT to investigate and validate the ability of the device to generate high quality and accurate data for the automation system.

Sustainability (on-farm)

EAP – Biopolymers to deliver bioactive compounds that reduce enteric methane

Project code	P.PSH.2018	**Location**	National
Start date	1 April 2022	**Vendor**	Dean Wenke; The University of Queensland
End date	1 October 2027	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project will develop fully biodegradable biopolymer bolus to deliver 3-NOP, and potentially other antimethanogenic feed additives, to cattle in extensive and intensive systems. It addresses the need to deliver controlled rates of antimethanogenic feed additives to cattle, particularly in grazing systems in northern Australia, to enable actual and measurable reductions in the production of enteric methane. The work will contribute to the feasibility of using feed additives in northern grazing environments, where it is currently difficult to administer supplements on a regular basis, and contribute to emissions reduction (>30% reduction in methane emissions intensity per enterprise) from this large component of Australia's cattle herd.

Southern Multibreed Immune Competence project – Improving the resilience of Australian beef cattle

Project code	L.GEN.2217	**Location**	National
Start date	1 March 2022	**Vendor**	CSIRO
End date	30 November 2023	**Funding source**	Levy
Initiation of research	Industry		

This project provided a unique opportunity to investigate resilience-related traits within and across breeds by assessing such traits in individuals from different breeds but with a similar 'life experience'. This project aimed to investigate resilience traits across different breeds of beef cattle, not to assess which breed is more immune competent, has better temperament or improved stress coping ability, but rather, to identify attributes of a particular breed which make them better able to cope with specific challenges and investigate if such attributes can be targeted in other breeds to improve their resilience.

Sheep and lamb

Completed R&D projects

High Value Food Frontiers

Ovine collagen opportunities using freeze dry technology

Project code	P.PSH.1347	**Location**	National
Start date	1 December 2021	**Vendor**	Freeze Dry Industries Pty Ltd
End date	30 May 2023	**Funding source**	MLA Donor Company
Publication date	*13 December 2023*	**Initiation of research**	External partnership

This project established the potential opportunities and feasibility of extracting collagen from ovine skin using freeze drying technology. Freeze Dry Industries (FDI) mapped the current skin stream within the sheepmeat processing sector and collected and developed prototype ovine collagen powder from sheep skins. FDI completed all necessary scientific validation from both NATA accredited labs for nutritional and microbiological analysis, and the University of Southern Queensland for molecular weight distribution and amino acid analysis. This prototype will further build collagen know-how with MLA Donor Company's current investment with Organic Technology Holdings ovine powder offering (P.PSH.1297) as well as current FDI produced beef collagen powder (P.PSH.1274).

Reduction of vitamin A in lamb liver for pet food application

Project code	P.PSH.1430	**Location**	National
Start date	1 December 2022	**Vendor**	AgResearch Ltd; ProAnd Associates
End date	2 May 2023	**Funding source**	MLA Donor Company
Publication date	*25 October 2023*	**Initiation of research**	External partnership

This project investigated vitamin A levels in liver, a highly palatable and nutrient-dense organ used as an ingredient in pet food formulations, and abundantly produced by the meat industry. Liver, however, can only be included into pet foods in limited quantities owing to its high vitamin A (VA) content to prevent toxicity in cats and dogs. Currently, pet food manufacturers do not know the VA content of their liver ingredients as it varies with the age and diet of the animal, and different regional sources of liver may vary substantially. As a result, manufacturers must maintain a relatively low inclusion rate (generally recommended to be <5–10 wt% DM of the diet) to ensure the consumption of the final product will not lead to VA toxicity. To enhance the overall palatability and nutritive value of pet food and treats, it would be advantageous to include liver in higher proportions, without concomitant increase in total VA in the final formulation. The project findings will be primarily of use to the red meat and pet food industry, specifically red meat processors, and ingredient and pet food manufacturers, to determine whether such a process warrants further investigation.

Viability and feasibility of ovine collagen – Phase 2

Project code	P.PSH.1394	**Location**	National
Start date	18 May 2022	**Vendor**	Food Innovation Partners; Organic Technology Holdings
End date	15 March 2023	**Funding source**	MLA Donor Company
Publication date	*18 October 2023*	**Initiation of research**	External partnership

This project follows consumer interest in collagen-based products which is growing in various applications, including food and beverage, nutraceutical supplements, cosmetics, and medical products. Consumers are particularly focusing on health and performance nutrition, with the nutraceutical collagen market estimated to account for 40% of collagen product sales in 2025. Collagen's characteristics as a bioavailable bonding material has resulted in growth in both cosmetic and medical applications. Its most prevalent use among cosmetic consumers is in skincare products, with this popularity due to its 'revitalising' and 'renewing' properties. Collagen products obtained from Australian sheep have unique market advantages, i) isolated disease-free herd in Australia, (only prion-free ovine in the world) ii) safe, fully traceable from the 'farm to the consumer' and iii) culturally acceptable worldwide (acceptable to Muslim, Hindu and Buddhist populations as opposed to porcine and bovine collagen).

Live export (research & development)

Automated sheep counting on mobile devices

Project code	W.RDE.0008	**Location**	National
Start date	8 December 2021	**Vendor**	University of Technology Sydney
End date	30 June 2022	**Funding source**	Levy
Publication date	*5 March 2024*	**Initiation of research**	LEP

This project, based on the initial R&D project, Automated sheep counting for the livestock export industry (W.LIV.2000), was the next phase to develop and implement the technology and software onto Android mobile devices to make this technology more accessible and widely available. To achieve this goal, several issues need to be resolved due to heavy AI-based video processing requirements for sheep counting. This successful code written for desktop, must be condensed and re-written to operate on handheld Android smart devices.

Performance and value of the live sheep export trade

Project code	W.RDE.0022	**Location**	International
Start date	2 December 2022	**Vendor**	ACIL Allen Consulting Pty Ltd
End date	30 June 2023	**Funding source**	Levy
Publication date	*8 March 2024*	**Initiation of research**	LEP

This project looked at findings from the Community Sentiment survey (conducted by the LEP RD&E program), which showed the Australian community recognises the value of the live export trade where it provides social and economic good to the community. The sustainability of the sheep livestock export industry is dependent on three broad areas:

1. Meeting the needs of customers in the Middle East
2. Meeting the welfare expectations of the community
3. Delivering economic value to the broader Australian sheep industry, particularly in Western Australia.

Through examining these, this project provided a comprehensive understanding of the value and sustainability of the sheep livestock export trade with the Middle East, both domestically and in-market.

This project drew on a range of sources and expertise to measure the performance of the live sheep export industry in Australia over the last four years. It leveraged existing information, data sources, and public information (from reputable sources) where possible.

Livestock genetics

Sheep Genetics database re-development – Phase 3

Project code	L.GEN.2202	**Location**	National
Start date	1 July 2021	**Vendor**	Servian Pty Ltd
End date	4 April 2022	**Funding source**	Levy
Publication date	*20 February 2024*	**Initiation of research**	Industry

The overall aim of this project was to deliver a single sheep database system containing sheep pedigree, data and genotypes. This information is currently spread across more than six databases. This component completed the new reporting systems, allowing ram breeders and buyers to make improved breeding decisions. It also migrated the Sheep Genetic Data Warehouse to the ISC Data warehouse, allowing more data to be shared to inform projections and decisions.

Sheep Genetics software and technical support

Project code	L.GEN.0003	**Location**	National
Start date	15July 2021	**Vendor**	Servian Pty Ltd
End date	15 June 2022	**Funding source**	Levy
Publication date	*13 February 2024*	**Initiation of research**	Industry

This project was a support model to support digital infrastructure and software for the Sheep Genetics team. Sheep Genetics has a range of digital products and software that are in different platforms and using different program languages.

This support included:

- support updates made during the project Sheep Genetics database re-development
- provide ongoing support for new and existing infrastructure and software including APIs, the new Sheep Genetics search site and other infrastructure maintained by Sheep Genetics. This included fixing problems and issues with current and updated systems that required immediate attention to maintain daily Sheep Genetics activities.

Market access science

Shelf life of all lamb primals using new high adhesion vacuum packaging

Project code	P.PIP.0589	**Location**	National
Start date	28 October 2021	**Vendor**	Australian Meat Processor Corporation; WAMMCO International
End date	26 May 2022	**Funding source**	MLA Donor Company
Publication date	*1 November 2022*	**Initiation of research**	Commercial partnership

This project followed the success of the pilot trial on lamb racks and shanks and looked at assessing the whole range of lamb products using the new packaging. This project trialled the packaging on product ranging from the legs to shoulders, both bone in and bone out products. A total of nine different primals were tested and matched with the shelf life calculator.

Producer adoption

Making More from Sheep (MMFS) website and maintenance agreement 2020–22

Project code	L.MMS.2101	**Location**	Southern Australia
Start date	20 December 2021	**Vendor**	Australian Wool Innovation
End date	30 September 2024	**Funding source**	Levy
Publication date	7 August 2024	**Initiation of research**	Industry

This project ensured the MMFS website remains current and updated to capture the 'must dos' of managing a successful sheep enterprise, generated from years of research and on-farm experience. To ensure producers are receiving the most current and accurate information, content from the 12 modules needs to be reviewed by subject matter experts and updated with the latest research outcomes and tools.

R&D projects in progress

Animal wellbeing

Sterile Insect Technique (SIT) to eradicate sheep blowfly on Kangaroo Island

Project code	P.PSH.1470	**Location**	Southern Australia
Start date	1 January 2023	**Vendor**	PIRSA; South Australian Research and Development Institute; University of Adelaide
End date	31 December 2026	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project recognises that flystrike by sheep blowfly costs the sheep industry $324M per year through direct losses in meat and wool production and management costs. Current management strategies are not always effective and represent risk from chemical resistance and animal welfare concerns. This project will work to develop a sterile insect technique to eradicate sheep blowfly in Kangaroo Island to demonstrate the technique to be effective in geographically distinct regions, measure the benefit to producers, and add SIT to the suite of tools that can be employed to control flystrike on the mainland.

A vaccinology approach to control scour worms

Project code	P.PSH.1445	**Location**	National
Start date	1 March 2023	**Vendor**	The Moredun Research Institute
End date	31 December 2028	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

An effective vaccine against a parasite requires an antigen that elicits an immune response against the parasite in question, targeted at the parasite's site of infestation. Almost the entire Australian sheep flock is challenged by infestation with Small Brown Stomach Worm and Black Scour Worm (the 'scour worms'), that are not primary blood suckers, and hence, less susceptible to antibodies circulating in the blood stream. The challenge is to find the right antigen, ensure that the response it elicits is expressed at the site(s) of infestation, and has an effect that leads to the death or inactivation of the parasite. Successful completion of this research will also benefit beef and goat meat producers.

Digital value chain information

Gundagai Meat Processors digital products officer

Project code	P.PSH.1438	**Location**	National
Start date	1 November 2022	**Vendor**	Gundagai Meat Processors; Hirino Pty Ltd
End date	31 January 2026	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project covers the engagement of a Digital products officer (DPO), plus producer activities within Gundagai Meat Processors (GMP) to drive adoption of data and digital technologies, including the adoption and use of eNVD and the increasing array of feedback and data being provided to producers. The project will accelerate the adoption of whole-of-value chain digital strategies aligned to the IS2025 strategy. It will drive adoption of Integrity Systems Company (ISC) core programs including eNVD, disease and defect data and producer feedback. It will also assist GMP to build data and digital capability to accelerate this adoption.

Eating quality

MSA sheepmeat research, development, technical and analytical support

Project code	L.EQT.2302	**Location**	National
Start date	1 November 2022	**Vendor**	David Pethick
End date	30 June 2024	**Funding source**	Levy
Initiation of research	Industry		

This project involves the consultant assisting with the development and implementation of selected lamb and sheepmeat eating quality research projects as directed by MLA.

This project will include, but is not limited to:

- input into strategic development and experimental designs of nominated R&D plans and projects
- continual development and innovation of the MSA Sheepmeat Model
- provision of scientific and industry support to MSA team members.

MSA saleyard pathway evaluation for sheepmeat

Project code	L.EQT.2301	**Location**	National
Start date	15 September 2022	**Vendor**	Murdoch University; University of New England
End date	20 June 2024	**Funding source**	Levy
Initiation of research	Industry		

This project aims to increase lamb eligibility for the MSA Sheepmeat model by evaluating the effects of selling methods on meat quality parameters of lamb. Currently, the model only allows direct consignment to be eligible for MSA. A saleyard pathway would allow more animals to be included into the model. The project will compare direct consignment with saleyard to slaughter and will also include a saleyard combined with five-day refeeding prior to slaughter experiment following discussion with industry about commercial practice and practicality.

Statistical development of MSA Sheepmeat Model FY22, FY23, FY24

Project code	L.EQT.2303	**Location**	National
Start date	19 September 2022	**Vendor**	Pleasants Farms Ltd
End date	19 September 2024	**Funding source**	Levy
Initiation of research	Industry		

This project will involve further statistical development of the MSA cuts based sheepmeat grading model to include new cut x cook information.

Feedbase production

Transformational and integrated feedbase for mixed farming zones of southern Australia

Project code	B.PAS.0010	**Location**	Southern Australia
Start date	30 January 2022	**Vendor**	CSIRO
End date	30 June 2027	**Funding source**	Levy
Initiation of research	Industry		

This project will increase sustainability and productivity in the Mixed Farming Zone of WA and NSW using advanced forage systems to support livestock enterprises. It will compare emerging and existing forage options, identify novel mixtures, demonstrate more practical and flexible options to transform feed supply and fill nutrient gaps for greater winter biomass, use annual legumes to extend the growing season and strategic forage conservation and perennial systems targeting soils marginal for cropping.

High Value Food Frontiers

Market validation of functional beverages containing collagen peptides from Australian sheep

Project code	V.RMH.2400	**Location**	National
Start date	23 November 2023	**Vendor**	Food Innovation Partners Pty Ltd
End date	31 December 2023	**Funding source**	Levy
Initiation of research	Industry		

This project aimed to determine if a range of carbonated functional beverages made with Australian collagen could be developed. Three stock keeping unit (SKU) products were manufactured along with the completion of Nutrition Information Panels (NIPs) for each. The project determined what the functional claims that could be made were and what the size of the total addressable market could be.

Lamb Co-Products Compendium

Project code	V.RMH.0007	**Location**	National
Start date	30 April 2023	**Vendor**	Coleby Processing Consulting Pty Ltd
End date	30 January 2024	**Funding source**	Levy
Initiation of research	Industry		

This project recognised that co-products comprise a significant proportion of the returns from animal processing with lamb co-products and are yet to be fully exploited by the industry in Australia. The Lamb Co-Products Compendium will accompany the current MLA Co-Products Compendium, which is highly skewed towards beef value adding, and will reference existing co-product R&D reports and act as an industry knowledge centre for lamb co-product processing. Further, the Compendium will be a resource to share with industry and processors to help users realise the potential value add opportunity space for lamb co-products.

Innovation capability building

Kinross Station Pty Ltd Co-Innovation manager: Developing branded lamb programs through the adoption of objective measurement (OM) technologies

Project code	P.PSH.1455	**Location**	NSW
Start date	1 March 2023	**Vendor**	Kinross Station Pty Ltd
End date	28 February 2025	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project partners with Kinross Station Pty Ltd (Kinross Station) – a leading prime lamb seedstock business focusing on the production of maternal and terminal sires. The business influences the genetics of up to 1 million lambs a year across Australia. Kinross Station has earnt a position of industry leadership for marbling. A high level of IMF (5%+) can and is being achieved in lambs through a combination of Terminal and Maternal genetics as well as management of feed, age and weight. The biggest challenge for industry is the ability to consistently achieve IMF targets of 5%+ while also maintaining high lean meat and primal yields from low cost, easy to manage production systems. Through partnering with their clients and commercial partners, the business proposes to use OM technology to validate the optimal combination of Terminal and Maternal genetics with the goal of achieving 75%+ consignment compliance for IMF 5%+ while maintaining acceptable lean meat and primal yield across 180,000 lambs per calendar year.

GMP Collaborative Innovation program manager

Project code	P.PSH.1326	**Location**	NSW
Start date	1 September 2021	**Vendor**	Gundagai Meat Processors
End date	30 September 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project's agreement makes provision for a Co-Innovation Program Manager to support implementation, validation and commercialisation of objective measurement technologies and a value based marketing (VBM) system for lamb at Gundagai Meat Processors (GMP).

Livestock genetics

Implementation of the Sheep Genetics Database Systems and Genomic Database Proof of Concept Summary

Project code	L.GEN.2203	**Location**	National
Start date	25 September 2022	**Vendor**	Servian Pty Ltd
End date	14 January 2024	**Funding source**	Levy
Initiation of research	Industry		

This project involved the redevelopment of the Sheep Genetics (SG) database systems has been conducted across three phases. The redevelopment included the migration of five databases into a single database, development of an import and export system from the database, migration to the ISC data warehouse and development of a reporting system for breeders to access results. The redeveloped database was scheduled to go live in April 2022. Significant parallel testing and transition to production databases was required. External support prior to, during and post launch was important to ensure a seamless transition for Sheep Genetics clients. Testing of simulated load requirements and providing proof of concept of different technologies that can be used for future genomic database redevelopment was also covered in this project. This piece of work focused solely on the implementation of previous work and utilising funds from genomics income to investigate what future development will look like.

Develop genomic prediction tools for commercial Merino sheep

Project code	P.PSH.1483	**Location**	National
Start date	1 August 2023	**Vendor**	University of New England
End date	1 December 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project aims to develop and validate genomic prediction for commercial animals by building a pipeline for such predictions based on the Sheep Genetics evaluation system. Validating of predictions with commercial data and engaging with producers to evaluate the cost and benefit of mob based and individual genomic prediction of genetic merit will form the basis of further commercialisation.

Understanding the genetic variation in shedding characteristics of sheep to develop a shedding breeding value

Project code	P.PSH.1421	**Location**	National
Start date	31 December 2022	**Vendor**	Animal Genetics and Breeding Unit
End date	31 December 2025	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project, in conjunction with seed stock Maternal shedding sheep breeders, will improve understanding of the genetic architecture behind shedding, with the aim to develop breeding tools to aid the selection for, and infusion of, shedding characteristics into commercial flocks. Increasing the number of animals with recorded phenotypes and genotypes will enable the discovery of key genes and the development of breeding values for industry.

Objective measurement

Ovine IMF – Marbl™ Twin Sensor production system development and installation

Project code	P.PSH.1494	**Location**	National
Start date	1 October 2023	**Vendor**	InMR Measure Limited
End date	31 October 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project will build, develop and evaluate an automated Nuclear Magnetic Resonance (NMR) hot lamb Intra-Muscular Fat (IMF) measurement solution in a lamb supply chain. An existing pre-commercial prototype will be further developed to become an automated device for commercial testing to measure IMF at chain speed. The NMR device will also undergo final calibration with the intent to seek AUS-MEAT accreditation.

Intramuscular-Fat Measurement for live sheep

Project code	V.TEC.1730	**Location**	National
Start date	1 September 2023	**Vendor**	InMR Measure Limited
End date	31 May 2024	**Funding source**	Levy
Initiation of research	Industry		

This project involves the design, build and testing of a proof-of-concept Nuclear Magnetic Resonance (NMR) hardware and software (Marbl™) sensor system for the purpose of obtaining live sheep Intra-Muscular Fat (IMF) data. If successful, this non-invasive method for measuring IMF in live sheep/lambs could contribute to the genetic selection for optimal eating quality in sheepmeat. The primary benefit is expected to be that data captured using objective measurements from live animals can contribute to 'whole of life' validation and used to create additional value through carcase compliance and genetic feedback. Further work will be required beyond this project to progress the technology to a commercial solution.

Microwave detection of contaminants in trim

Project code	V.TEC.1728	**Location**	National
Start date	15 July 2023	**Vendor**	Murdoch University
End date	15 November 2024	**Funding source**	Levy
Initiation of research	Industry		

This project aims to develop a prototype online monitoring system of meat composition and plastic physical contaminants detection using microwave scanning technology for red meat processing facilities. Specifically, this project will evaluate an initial concept for evaluation of detecting plastics in trim and minced product to support future adoption of the microwave prototype device by primary and secondary beef and/or lamb processing. This project will be carried out over two experimental phases. The first phase is the design and development of hardware, software and online data processing systems. The second phase will be to use this concept design within a laboratory setting to calibrate the meat scanning and plastic detection system.

Online measurement of Intra-Muscular Fat in hot lamb carcases

Project code	V.TEC.1723	**Location**	National
Start date	30 July 2021	**Vendor**	University of Adelaide
End date	20 December 2024	**Funding source**	Levy
Initiation of research	Industry		

This project relates to an imaging needle which uses an established medical technology which has established a positive proof-of-concept to measure Intra-Muscular Fat (IMF)% in an un-cut lamb carcase. A current project is re-engineering the probe to be more robust and to develop an initial automated image analysis algorithm, to enable further testing and development to be undertaken under commercial conditions utilising the MLA Resource Flock. This project supports an ARC Linkage Grant to refine the pre-commercial prototype under development, validate the precision and accuracy of IMF measurements and release a prototype device to an early-adopter industry partner.

Translating Intra-Muscular Fat measurement technology to the sheepmeat industry

Project code	V.TEC.1726	**Location**	National
Start date	1 December 2021	**Vendor**	Miniprobes Pty Ltd;
End date	31 October 2024	**Funding source**	Levy
Initiation of research	Industry		

This project will support a successful CRC-P grant of $1.5M to deliver a commercially applicable intramuscular probe to measure Intra-Muscular Fat in un-cut carcases. This project will focus on lamb but the device being developed will also be applicable to beef.

Producer adoption

SA best-practice wild dog control demonstration network

Project code	P.PSH.1428	**Location**	South Australia
Start date	1 December 2022	**Vendor**	PIRSA
End date	31 July 2027	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project will involve the development of producer-led wild dog control groups engaged in trials of locally tailored novel control approaches to deliver landscape-scale management and monitoring of wild dogs. The landholder groups will have access to resources and technical support skills development for wild dog management, livestock productivity and business management. The outcomes of these groups will be used to produce published, best-practise wild dog control materials and interactive tools.

Lamb survival in SE Queensland rangelands

Project code	P.PSH.1348	**Location**	Queensland
Start date	11 October 2021	**Vendor**	Sheepmatters Pty Ltd
End date	1 July 2026	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This integrated R&D Producer Demonstration Site (PDS) addresses the 'Our Livestock' priority of the MLA Strategic Plan by facilitating and demonstrating the adoption of data-based decision making to increase on-farm productivity of sheep. By targeting reproductive performance, it also contributes to the priorities of the Sheep Reproduction Strategic Partnership.

The lamb survival project will upskill core and observer producers, by developing the skills and confidence to use the data collected on their sheep to help make informed management decisions. Emerging technologies such as remote objective weight measurement, or walk over weigh (WOW), and objective condition scoring have also been trialled. By assessing change in liveweight and condition score, appropriate management practices can be implemented to increase reproduction rate and decreasing mortality in the core and observer producers breeding flocks. This will directly improve their productivity and profitability.

Sheep productivity

Fit to Lamb Phase 1: Lamb mortality database and field work

Project code	P.PSH.1399	**Location**	National
Start date	15 May 2022	**Vendor**	Murdoch University
End date	30 December 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project recognises that peri-natal lamb mortality continues to impact the Australian red meat industry, with 54% mortalities associated with dystocia. This enabling project has two components, a research informing phase with the development of a 'fit to lamb' database (hosted by Animal Health Australia) utilising existing lamb mortality data, and a CSIRO field work component. The 'fit to lamb' database will be used for a meta analysis with outcomes used to inform and identify future research priorities for reducing lamb mortality.

Quantifying and improving reproductive performance of shedding sheep

Project code	P.PSH.1447	**Location**	National
Start date	16 April 2023	**Vendor**	University of Adelaide
End date	1 May 2027	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project involves a five year investment which will quantify shedding sheep reproductive performance, provide an understanding of the causes of reproductive wastage in shedding sheep breeds and determine potential management options to mitigate these causes of reproductive wastage across different agro-ecological zones (e.g. pastoral vs high rainfall) in SA, Queensland, NSW, WA and Victoria.

Merino ewe mortality – Prevalence, causes and mitigation strategies

Project code	L.LSM.0036	**Location**	National
Start date	30 April 2023	**Vendor**	Pinion Advisory Trust
End date	28 December 2027	**Funding source**	Levy
Initiation of research	Industry		

This project conducted in three phases will: 1) examine the rates and causes of Merino ewe mortality, 2) trial practical intervention strategies to reduce Merino ewe mortality with producer groups and 3) complete economic modelling of the impacts of Merino ewe mortality and the value of intervention at a farm and industry level.

Pasture mixes to finish lambs in East Gippsland – Nexus Involve & Partner

Project code	P.PSH.1415	**Location**	East Gippsland
Start date	1 September 2022	**Vendor**	University of Melbourne
End date	30 September 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project will demonstrate the use of mixed species pastures to finish lambs in East Gippsland. Benefits of mixed species pastures could include having a range of species that can grow under different climatic conditions (adaptation to climate variability), higher animal growth rates (increased productivity) and earlier turnoff times for animals (adaptation to climate variability and avoided greenhouse gas emissions).

SheepLinks: Carcase feedback for improved on-farm productivity

Project code	P.PSH.2140	**Location**	WA
Start date	17 January 2022	**Vendor**	AxiChain Pty Ltd; DPIRD
End date	30 May 2026	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project is part of the SheepLinks Program initiative. It will involve the development and delivery of an adapted Profitable Grazing Systems package focusing on understanding Objective Carcase Measurement Feedback and addressing feedback within on-farm production systems. This project builds on the existing Meat the Market PGS package, with an additional analysis and coaching component added to delivery to further support implementation of practices on-farm.

Goats

Completed R&D projects

Goat productivity

Survey of Australian goat producers' use of KIDPLAN

Project code	P.PSH.2137	**Location**	National
Start date	30 August 2021	**Vendor**	The University of Queensland
End date	30 June 2022	**Funding source**	MLA Donor Company
Publication date	*16 May 2024*	**Initiation of research**	External partnership
This project aimed to evaluate the understanding of, and impediments to the use of KIDPLAN amongst breeders and producers of goats in Australia. The findings from this project will allow MLA to revisit and refine their strategy around the implementation of KIDPLAN.			

R&D projects in progress

Goat productivity

Measured rangeland goats – Realising the potential

Project code	P.PSH.1453	**Location**	National
Start date	15 May 2023	**Vendor**	NSW DPI
End date	31 December 2028	**Funding source**	MLA Donor Company
Initiation of research	External partnership		
This project investment will support the establishment of a genetic resource herd at the NSW DPI Condobolin Research Station. This herd, comprised of 1,000 breeders, will be joined five times over a four-year period and will represent Rangeland, Boer, and Kalahari breeds. Traits measured will include growth, reproduction, carcase, worm egg count and others.			

Quantifying and improving goat reproductive performance and reducing kid loss

Project code	P.PSH.1373	**Location**	National
Start date	1 February 2022	**Vendor**	The University of Queensland
End date	31 March 2028	**Funding source**	MLA Donor Company
Initiation of research	External partnership		
This project recognises that there is an opportunity to increase the production of goats in Australia, particularly within arid regions where climate change has caused changes to many grassland and pastoral systems resulting in less grass production and increased shrubs and woody regrowth. Goats are primed to take advantage of these environmental changes because of their unique abilities to digest and thrive on low quality diets. However, goat reproduction efficiency is a major impediment to the growth of the meat goat industry and little information exists on what the reproduction benchmarks for the different production systems are and what causes the kid losses. To address these opportunities and challenges this project will 1) quantify goat reproductive performance across five seasons and across a range of production system types, 2) evaluate the drivers of variation and 3) demonstrate improvements through management interventions.			

A review of internal parasite management and control in the Australian goat industry

Project code	B.GOA.0132	**Location**	National
Start date	3 February 2023	**Vendor**	Colere Group Pty Ltd
End date	14 July 2023	**Funding source**	Levy
Initiation of research	Industry		

This project recognises that internal parasites are a major problem for goat producers in Australia and they are extremely limited in the number of approved pesticidal actives available to them. The project builds on the recent MLA project 'Sustainable internal parasite control in goats', and consults broadly with goat producers, vets/technical experts, product manufacturers/marketers and regulatory experts, to provide a comprehensive evaluation of the current situation and offer a range of potential paths to increasing the diversity of available products and providing specific technical advice.

Producer adoption

Queensland Goat Producers Inc – Building a commercial goat producers' representative community

Project code	L.GOA.0002	**Location**	Queensland
Start date	31 March 2023	**Vendor**	Queensland Goat Producers Inc
End date	1 June 2024	**Funding source**	Levy
Initiation of research	Industry		

This project will support the formation and initial activities of the Queensland Goat Producers Inc group based at Emerald, including development of a formal constitution, membership database and hosting of a series of workshops across Queensland in 2023. The project will actively support the enhancement of capability and capacity in the region and support interaction between regional goat producers, GIRDAC and MLA.

Sustainability (on-farm)

Goat industry – Sustainability credentials project

Project code	P.PSH.2304	**Location**	National
Start date	15 February 2023	**Vendor**	The University of Queensland
End date	1 September 2026	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project will address this gap and will see the goat industry playing an active role in the industry CN30 goal. The project will encompass three core activities

1. quantifying the GHG emissions of goats
2. evaluating sequestration opportunities for extensive goat enterprises
3. establishment of three goat CN30 demo sites, in different agro-ecological zones, where emissions performance can be baselined, strategies of reduction evaluated and sequestration projects established.

All grassfed species

Completed R&D projects

Producer adoption

Adoption team 2022 Impact assessment finalisation

Project code	L.ADP.2307	**Location**	National
Start date	22 May 2023	**Vendor**	Beattie Consulting Services Pty Ltd
End date	30 June 2023	**Funding source**	Levy
Publication date	*6 May 2024*	**Initiation of research**	Industry
This project aimed to result in the calculation of benefits obtained from PDS projects in the January 2022 to April 2023 period, and complete finalisation of the impact assessment reports (for calendar year 2022) for MLA Adoption programs that are required to report the impact figures in the Producer Adoption Outcomes Report (published in Aug 2023).			

SALRC Regional funds management 2021–22

Project code	L.SAL.2201	**Location**	Southern Australia
Start date	1 July 2021	**Vendor**	Southern Australia Livestock Research Council
End date	1 April 2023	**Funding source**	Levy
Publication date	*6 May 2024*	**Initiation of research**	Industry
This agreement covered the 2021–22 allocation of MLA funds for the Council that were administered by SALRC on behalf of MLA. The funds were used for SALRC Regional Committee operations, producer member sitting fees and travel expenses, meeting expenses, producer member training, member recruitment costs and SALRC secretariat management fee.			

WALRC Regional funds management 2021–22

Project code	L.WAL.2201	**Location**	Western Australia
Start date	1 July 2021	**Vendor**	West Australian Regional Advisory Council
End date	1 April 2023	**Funding source**	Levy
Publication date	*16 May 2024*	**Initiation of research**	Industry
This agreement covered the 2021–22 allocation of MLA funds for Regional Consultation that were administered on behalf of MLA. The funds were used for West Australian Regional Advisory Council operations, producer member sitting fees and travel expenses, meeting expenses, producer member training, member recruitment costs to deliver on the Regional Consultation objectives.			

R&D projects in progress

Feedbase production

Impacts of pasture management on dieback and pasture resilience

Project code	P.PSH.1459	**Location**	National
Start date	1 May 2023	**Vendor**	Queensland University of Technology
End date	30 January 2026	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project aims to determine mechanisms that enhance tolerance, resistance and recovery of pastures and pasture grasses to pasture mealybug and 'pasture dieback'. It will collaborate with program participants to screen grass varieties prior to field trials using rapid laboratory assays with mealybugs, and with DLF Seeds and program participants to identify pasture management options to reduce mealybug and prevent or reduce severity of subsequent 'dieback'. It will complete transcriptome analysis in conjunction with laboratory assays to determine the impacts of pasture mealybug and its bacterial symbiont on plant defences (JA/SA pathways) in susceptible and tolerant grass varieties, the interaction of mealybug infestation with the fungal pathogen Fusarium as a secondary infection, and the potential beneficial impacts of rhizospheric endophytes on plant immunity and resistance to mealybug and pasture dieback. It will provide expert contributions to extension materials, field days and MLA events, on-farm trials both within the project and with program participants, and, through embedded internships with DFL Seeds and AGRF, provide training and relevant career experience to two PhD students.

High-performance pasture mixes for acidic soils to boost production and increase soil carbon sequestration

Project code	P.PSH.1355	**Location**	South East Australia
Start date	3 January 2022	**Vendor**	NSW DPI
End date	15 July 2026	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project will take a system approach to fully evaluate and assess the benefits of lime and organic materials to livestock production, soil condition (acid soils) and climate mitigation in south-eastern Australia. This proposal builds on significant past and current NSW DPI investment in acid soil management and the screening, evaluation and management of pasture species. However, there is limited data to guide on-farm management of acidic soils supporting contemporary grazing systems or the impact of change in acid soil status (increase or decrease) on the feed quality, mineral nutrient balance, persistence, composition, compatibility and SOC sequestration potential of pasture species and mixes.

Mixed species annual fodder crops to increase grazing animal production

Project code	P.PSH.1358	**Location**	South East Australia
Start date	3 January 2022	**Vendor**	NSW DPI
End date	30 April 2026	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project recognises that single species fodder crops such as cereals, brassicas or legumes have become a critical component of addressing feed gaps in livestock systems and to finish livestock to meet specifications on time. Despite such crops enhancing the flexibility of farm operations, they can cause animal production problems such as mineral imbalances and suboptimal growth rates. There is intense producer interest in the use of mixed species fodder crops which potentially deliver multiple benefits – balanced nutritional profiles, higher animal growth rates, longer growing season and higher biomass production, resilience forage production in the face of climate variation and improved soil condition (carbon). This project will gather evidence to verify the potential of these crops to improve or extend forage growth and quality, enhance animal production, mitigate animal wellbeing issues and provide legacy long-term agronomic benefits. If sown fodder in mixed farming zones is adopted, the carrying capacity of sown fodder crops could increase by 3.5 M DSE across SE Australia (NSW, Victoria, SA) with a current value of $353/ha in mixed farming zones.

Innovation capability building

Paraway Pastoral CN30 Collaborative Co-Innovation program

Project code	P.PSH.1402	**Location**	National
Start date	30 April 2022	**Vendor**	Paraway Pastoral Company Pty Ltd
End date	15 December 2025	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project centres around Paraway's Co-Innovation program that has been developed to explore, pilot and scale greenhouse gas management interventions outlined in the Industry's CN30 Roadmap to deliver environmental, economic, and social impacts to Paraway Pastoral and the Australian red meat industry. Paraway Pastoral have agreed to commence a three-year CN30 Collaborative Co-Innovation program with MLA.

Producer adoption

NutritionEDGE package updates

Project code	L.ADP.2127	**Location**	Northern Australia
Start date	14 May 2023	**Vendor**	Desiree Jackson Livestock Management
End date	31 March 2024	**Funding source**	Levy
Initiation of research	Industry		

This project involved Nutrition EDGE – one of the core training packages within MLA's EDGEnetwork program. It is a three-day workshop designed to give northern red meat producers a fundamental understanding of ruminant nutrition and the skills to improve animal performance within their production system. All packages needed updating to remain current and relevant. NutritionEDGE was last updated in 2017. This project also enabled an update of the NutritionEDGE package to: reflect changes to industry standards and terminology (such as Adult Equivalents and nutritional requirements); integrate the latest R&D; make improvements to the design of the package based on participant feedback; and incorporate more reference information for sheep and goat producers (currently the content is geared more towards beef).

Bullseye 2 Livestock Productivity

Project code	P.PSH.1341	**Location**	Western Australia
Start date	6 December 2021	**Vendor**	Southern Rangelands Pastoral
End date	31 May 2028	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project engages the Southern Rangelands Pastoral Alliance (SRPA) and experienced rangelands practitioners to facilitate and support the adoption of a suite of best management practices by 24 pastoralists across five million hectares of the WA Southern Rangelands. Focus will be placed on the dual outcomes of increasing range condition while increasing enterprise productivity through practices such as feed budgeting, weaning, vaccination, addressing nutritional deficiencies and increasing mustering efficiency.

Southern Rangelands Grazing (EDGE)

Project code	L.ADP.2301	**Location**	South Australia
Start date	1 December 2022	**Vendor**	Modo Pty Ltd
End date	30 June 2024	**Funding source**	External grant – Government of South Australia
Initiation of research	Industry		

This project recognises that there are currently very few regionalised training programs on offer to producers in the southern rangelands, particularly in relation to feedbase and grazing management. The project proposes to fill that gap by adapting the existing EDGEnetwork Grazing Fundamentals and Grazing Land Management packages for the southern rangelands context. The project will involve a review of current material and rangelands R&D/literature by a diverse group of local service providers, redevelopment of the package and pilot testing via 11 workshops in SA.

NABRC Regional funds management 2023

Project code	L.NAB.2301	**Location**	North Australia
Start date	1 July 2022	**Vendor**	North Australia Beef Research Council
End date	15 January 2025	**Funding source**	Levy
Initiation of research	Industry		

This project covers North Australia Livestock Research Council (NABRC) operations for 2022–24, producer member sitting fees and travel expenses, meeting expenses, producer member training, member recruitment costs and NABRC secretariat management fee.

SALRC Regional funds management 2023

Project code	L.SAL.2301	**Location**	Southern Australia
Start date	1 July 2022	**Vendor**	Southern Australia Livestock Research Council
End date	15 January 2025	**Funding source**	Levy
Initiation of research	Industry		

This project covers Southern Australia Livestock Research Council (SALRC) operations for 2022–24, producer member sitting fees and travel expenses, meeting expenses, producer member training, member recruitment costs and SALRC secretariat management fee.

WALRC Regional funds management 2023

Project code	L.WAL.2301	**Location**	Western Australia
Start date	1 July 2022	**Vendor**	Western Australian Livestock Research Council
End date	15 January 2025	**Funding source**	Levy
Initiation of research	Industry		

This project covers Western Australian Livestock Research Council (WALRC) operations for 2022–24, producer member sitting fees and travel expenses, meeting expenses, producer member training, member recruitment costs and WALRC secretariat management fee.

Maximising potential stocking rate through pasture management techniques

Project code	P.PSH.1442	**Location**	National
Start date	2 December 2022	**Vendor**	AgPro Management; Southern Cross University
End date	30 July 2028	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project will enable producers and advisors to build skills and capabilities to apply management practices which can deal with tough, variable seasons, with effective on-farm best practice to increase stocking rate through pasture management techniques. The project utilises existing MLA resources developed under the feedbase adoption plan, with an additional coaching and demonstration component added to further support implementation of practices on-farm.

Innovative mixed farming demonstration

Project code	P.PSH.1499	**Location**	Victoria, Tasmania
Start date	30 December 2023	**Vendor**	Southern Farming Systems
End date	30 July 2028	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

The purpose of this project is to increase the profitability and resilience of farms in Southern Australia through an increase in livestock numbers and the productivity of those animals through extension and adoption of MLA products and programs. It is aimed at capitalising on the recent shift in interest from crop intensive farmers to introduce more livestock into their farming businesses as well as supporting existing livestock producers.

EDGEnetwork support and coordination 2021–2023

Project code	L.EDG.2201	**Location**	Northern Australia
Start date	1 August 2021	**Vendor**	ETG Holdings Pty Ltd
End date	28 February 2024	**Funding source**	Levy
Initiation of research	Industry		

This project involved the EDGEnetwork, which offers practical learning opportunities to help beef and sheep producers (primarily in Northern Australia) gain knowledge and develop skills necessary to improve their livestock enterprises. These training workshops delivered key research and development messages, technologies, and have influenced 2.2M head of cattle, 284K sheep, and over 35M hectares of land in the 2020–21 financial year. The EDGEnetwork coordinator is responsible for coordinating the delivery of EDGEnetwork workshops and facilitating the review of workshop material, promoting EDGEnetwork workshops, maintaining all M&E data reporting and producing an annual EDGEnetwork report.

All red meat species

Completed R&D projects

Animal wellbeing

Lifetime Animal Wellbeing Index (LAWI) – Scope and governance project

Project code	B.AWW.0009	**Location**	National
Start date	27 February 2022	**Vendor**	CSIRO
End date	28 August 2022	**Funding source**	Levy
Publication date	*6 December 2022*	**Initiation of research**	Industry

This project recognises that the red meat industry is under increasing pressure to demonstrate strong commitments to animal welfare, however the assessment of wellbeing over an animal's entire lifetime, and the delivery to consumers of that information is complex. It requires a compelling business case that defines the scope, risk mitigation, delivery mechanisms, data platforms and governance of the program. As a first step, this project scoped a proposed framework based on existing welfare frameworks and stakeholder needs. This project also established a framework for a cost-benefit analysis, and proposed principles for database requirements and governance.

Priority list of endemic diseases for the red meat industry – 2022 update

Project code	B.AHE.0327	**Location**	National
Start date	14 February 2022	**Vendor**	Herd Health Pty Ltd
End date	22 June 2022	**Funding source**	Levy
Publication date	*21 July 2022*	**Initiation of research**	Industry

This project updated the costliest endemic diseases and conditions for the Australian beef cattle and sheepmeat industries from the previous 2015 report. The 2015 report identified 17 cattle and 23 sheep diseases and this report presented 18 cattle and 22 sheep diseases. One cattle disease (bovine Johne's disease) was removed from the priority list, and hydatids and trichomoniasis were added to the cattle disease priority list. For sheep, no new diseases were promoted, but sarcocystis was demoted to a minor impact disease. Parasites – buffalo fly, ticks and internal parasites – dominate the costs to the beef industry with each costing industry more than $100M per year. The major diseases that impact the sheep industry are associated with perinatal lamb mortality. Analysed separately, but closely associated with peri-natal losses are dystocia and mastitis, which are effectively subsets of peri-natal lamb mortality but also include ewe mortality. All these diseases cost the industry more than $100M per year.

Digital agriculture

MLA and ag-tech conceptual partnership to bring technological solutions to MLA Members

Project code	P.PSH.1393	**Location**	National
Start date	31 January 2022	**Vendor**	AATLIS Agribusiness Connect Ltd AgTech & Logistics Hub
End date	10 June 2023	**Funding source**	MLA Donor Company
Publication date	*9 May 2024*	**Initiation of research**	External partnership

This project's investment goal was to develop and trial a global Open Innovation model aimed to source, develop, deploy, evaluate (and drive the adoption of) digital agriculture solutions that solve real producer problems and support the creation of a data culture for the Australian red meat industry.

Ag-tech impact assessments

Project code	V.DIG.0025	**Location**	National
Start date	15 May 2022	**Vendor**	KPMG
End date	31 July 2022	**Funding source**	Levy
Publication date	*23 April 2024*	**Initiation of research**	Industry

The investment goals for this project are to deliver an initial CBA assessment of four MDC Partnership projects within MLA's Digital Agriculture Program, provide a case study in the absorptive capacity of producer project partners, and lay the foundation for a common evaluation and impact assessment framework applicable to all MLA digitalisation investments.

Livestock mustering with drones and pathways to adoption

Project code	P.PSH.1374	**Location**	National
Start date	14 March 2022	**Vendor**	Skyelpie
End date	29 May 2023	**Funding source**	MLA Donor Company
Publication date	*23 August 2023*	**Initiation of research**	External partnership

This project's goal was to demonstrate the viability of drones as a livestock mustering tool, and to support best practice industry adoption of this emerging technology compliant with existing regulations. This project used the latest in drone hardware and software to prove that this is a viable solution that will have many benefits to livestock producers and the industry at large. Gaps may be discovered in current technology, which will open the opportunity for further development of specific hardware and software that will revolutionise the way livestock are handled in the future.

Digital value chain information

Application Programming Interface strategy

Project code	V.ISC.2140	**Location**	National
Start date	7 February 2022	**Vendor**	Terem Technologies
End date	26 May 2022	**Funding source**	Levy
Publication date	*26 April 2024*	**Initiation of research**	Industry

The aim of this project was to develop a strategic Application Programming Interface (API) platform as an engine for products and programs that will be used within the industry to enable access to red meat data in a consistent method, with the possibility of monetisation. Integrity System Company (ISC) were looking to develop a strategically envisioned platform of manageable APIs as engines for MLA and ISC products and programs, business channels and business models to be used within the industry as well as by solution providers to enable access to red meat data in a consistent method and to also provide guided training investment. ISC is looking to consolidate all legacy and siloed API integration points across applications, support backward compatibility to legacy components where possible, as well as build a new solution to support the growing needs of our digital strategy – supporting scale, greater machine to machine automation, increased adoption of integration partners into our digital platforms.

Australian AgriFood Data Exchange Phase 2: Experiment 1 – Compliance

Project code	V.ISC.2137	**Location**	NSW; Victoria
Start date	29 November 2021	**Vendor**	Map of Ag Australia
End date	10 March 2022	**Funding source**	Levy
Publication date	*30 August 2022*	**Initiation of research**	Industry

This project related to a consortium of leading agrifood stakeholders including government, industry and research bodies which established the Australian AgriFood Data Exchange to enable fluid collaboration up and down Australian Agrifood's value chains. Phase 2 of the project involved identifying technology vendors to implement solutions for four experiments to inform the development of the Exchange platform. This experiment (1) looked to address the cumulative burden of compliance for producers through to processors operating in Victoria and NSW to enable producers to collate data for compliance purposes and share permissioned data with the relevant compliance programs in the required format.

Australian AgriFood Data Exchange Phase 2: Experiment 2 – Biosecurity

Project code	V.ISC.2139	**Location**	Victoria; South Australia
Start date	18 November 2021	**Vendor**	Eratos Pty Ltd
End date	10 March 2022	**Funding source**	Levy
Publication date	*29 July 2022*	**Initiation of research**	Industry

This project related to the Australian AgriFood Data Exchange – a multi-stakeholder project that aims to address the significant issue for agricultural industries and government, where although the use of data and analytics is becoming more widespread, the sectors are held back by the lack of a consolidated data exchange that combines multiple data sets from multiple data sources in real time. This program looked to address challenges for industry while also collaborating with the research, industry, commercial and Government sectors to leverage solutions, tools and techniques being developed across agriculture research, reducing duplication and providing access to additional whole of agriculture funds. This project looked to strengthen biosecurity in the viticulture sector by integrating standardised, accurate traceability data.

Australian AgriFood Data Exchange Phase 2: Experiment 3 – Benchmarking

Project code	V.ISC.2138	**Location**	Western Australia
Start date	18 November 2021	**Vendor**	AxisTech Telstra Corporation Ltd
End date	10 March 2022	**Funding source**	Levy
Publication date	*29 July 2022*	**Initiation of research**	Industry

This project related to the Australian AgriFood Data Exchange – a multi-stakeholder project that aims to address the significant issue for agricultural industries and government, where although the use of data and analytics is becoming more widespread, the sectors are held back by the lack of a consolidated data exchange that combines multiple data sets from multiple data sources in real time. This program looked to address challenges for industry while also collaborating with the research, industry, commercial and Government sectors to leverage solutions, tools and techniques being developed across agriculture research, reducing duplication, and providing access to additional whole of agriculture funds. This project looked at benchmarking to identify gaps and opportunities for improved performance pre harvest and will provide producers with contextualised recommendations to improve their outcomes around yield and profitability.

AUS AgriFood Data Exchange Phase 2: Experiment 4 – Traceability

Project code	V.ISC.2141	**Location**	Western Australia
Start date	19 November 2021	**Vendor**	Telstra Limited
End date	10 March 2022	**Funding source**	Levy
Publication date	*30 August 2022*	**Initiation of research**	Industry

This project related to the Australian AgriFood Data Exchange – a multi-stakeholder project that aims to address the significant issue for agricultural industries and government, where although the use of data and analytics is becoming more widespread, the sectors are held back by the lack of a consolidated data exchange that combines multiple data sets from multiple data sources in real time. This program looked to address challenges for industry while also collaborating with the research, industry, commercial and Government sectors to leverage solutions, tools and techniques being developed across agriculture research, reducing duplication and providing access to additional whole of agriculture funds. This project looked at implementing timely exchange of pre-fishing information, quota accounting data and product (catch) data from Department of Primary Industries and Regional (DPIRD) to fishers and GFC processors in a secure and permissioned manner.

Australian AgriFood Data Exchange Phase 2 and 3 – Evaluation chair

Project code	V.ISC.2147	**Location**	National
Start date	9 June 2022	**Vendor**	Agsecure Investment Australia
End date	19 February 2023	**Funding source**	Levy
Publication date	*23 January 2024*	**Initiation of research**	Industry

This project provided services as chairperson for the Evaluation Team assessing responses to targeted market engagement activities which led to a Request for Market Pricing (RMP). The Evaluation Team reviewed submissions for this stage and identified the best candidates for endorsement by the Steering Committee.

Australian AgriFood Data Exchange Phase 2 and 3 – Explainer animations

Project code	V.ISC.2324	**Location**	National
Start date	14 March 2022	**Vendor**	Charles Sturt University
End date	30 June 2022	**Funding source**	Levy
Publication date	*23 January 2024*	**Initiation of research**	Industry

This project looked to contract an experienced vendor to produce four 60–90 second animations, each focused on one of the prioritised use cases for phase 2 of the Australian AgriFood Data Exchange program. The four animations were focused across biosecurity (wine), traceability (rock lobster), benchmarking (grains) and compliance (meat and wool). The animations were to be a key marketing asset to leverage and inspire the Australian agrifood industry on the importance of creating a data exchange as an enabling piece of infrastructure, drive awareness of the initiative, clarify the benefits it seeks to deliver, and attract additional project funders and supporters of the Australian AgriFood Data Exchange.

Australian AgriFood Data Exchange Phase 2 and 3 – Potential implications and benefits for agrifood technology sector from the introduction of Australian AgriFood Data Exchange

Project code	V.ISC.2301	**Location**	National
Start date	15 August 2022	**Vendor**	Charles Sturt University
End date	15 June 2023	**Funding source**	Levy
Publication date	*23 January 2024*	**Initiation of research**	Industry

This project looked at the potential implications and benefits for the agrifood technology sector from the introduction of the Australian AgriFood Data Exchange. This involved informing the design of the operating model for the Australian AgriFood Data Exchange (OzAgDX). This is a joint project, which used the Food Agility CRC Limited Project agreement template, to be carried out by Charles Sturt University.

Australian AgriFood Data Exchange (AAFDX) Phase 2 and 3 (Project E)

Project code	V.ISC.2118	**Location**	National
Start date	14 August 2021	**Vendor**	KPMG
End date	29 March 2023	**Funding source**	Levy
Publication date	*6 April 2023*	**Initiation of research**	Industry

This project recognised that currently, the data systems used in Australia's agrifood sector are recognised as disparate, isolated and proprietary. A lack of a central platform poses a range of challenges to the sector, resulting in market failures in both information and coordination. The AAFDX project presents an opportunity to form the foundational digital infrastructure for the Australian agrifood industry to:

- enhance industry collaboration
- enable a national utility and service for biosecurity and compliance
- allow Australia to keep pace with other leading international agrifood industries.

The development of a national data exchange platform is well placed to accelerate agrifood tech innovation and increase agrifood enterprise financial outcomes. It is done in the context of policy and strategic alignment supported by the State and Commonwealth Governments, and industry.

Australian AgriFood Data Exchange Phase 2 and 3 (Project F)

Project code	V.ISC.2134	**Location**	National
Start date	15 September 2021	**Vendor**	Agsecure Investment Australia; The Robb Group
End date	30 June 2023	**Funding source**	Levy
Publication date	*30 January 2024*	**Initiation of research**	Industry

This project will provide services as chairperson for the Evaluation Team assessing the RFI responses for the Experiments phase of the Australian AgriFood Data Exchange project. The Evaluation Team will review tender submissions for the four experiments and identify the best candidates for endorsement by the Steering Committee.

Australian AgriFood Data Exchange Phase 2 and 3 (Project G)

Project code	V.ISC.2127	**Location**	National
Start date	15/09/2021	**Vendor**	Procure Group Pty Ltd
End date	30/06/2022	**Funding source**	Levy
Publication date	*30 January 2024*	**Initiation of research**	Industry

This project provided the services of a probity officer for the Evaluation Team assessing the RFI responses for the experiments phase of the Australian AgriFood Data Exchange project. The Evaluation Team reviewed tender submissions for the four experiments and identified the best candidates for endorsement by the Steering Committee.

Building digital capability in Australian agriculture

Project code	P.PSH.1354	**Location**	National
Start date	21 October 2021	**Vendor**	Australian Farm Institute; Telstra Corporation
End date	30 November 2022	**Funding source**	MLA Donor Company
Publication date	*9 February 2024*	**Initiation of research**	External partnership

This project recognised that identification of digital capability obstacles and opportunities in Australian agriculture can improve the cost-benefit ratio of investment aimed at improving technology adoption in the sector. This project mapped and defined agriculture-specific digital capability issues within an iterative capability framework, through the lens of material P2D recommendations. This exercise was to enable organisations to assess appropriate points for intervention to lift capability and could potentially identify capabilities that are not yet being addressed but are needed for sectoral health, sustainability and growth.

Investigating privacy and confidentiality risks in ISC data

Project code	V.ISC.2143	**Location**	National
Start date	20 March 2022	**Vendor**	CSIRO
End date	24 July 2022	**Funding source**	Levy
Publication date	*7 February 2023*	**Initiation of research**	Industry

The aim of this project was to identify and understand the privacy and confidentiality risks of ISC data and the efficacy of data treatment techniques when sharing data to reduce risks and develop processes and techniques in line with best practice data sharing. Additionally, to enable ISC to manage ongoing and evolving risks with data sharing, the CSIRO Data61 team helped build the capability of ISC resources.

Solutions to Feedback Library Disease and Defect Platform enhancement and condition

Project code	V.ISC.2226	**Location**	National
Start date	5 February 2023	**Vendor**	Herd Health
End date	1 November 2023	**Funding source**	Levy
Publication date	*19 November 2023*	**Initiation of research**	Industry

This project focused on refreshment, refinement and further development of the disease and defect section of the Solutions to Feedback Library. With the current re-development of myFeedback, improving information available to producers to make informed animal disease and defect treatment and prevention program decisions has never been timelier. The positive production outcomes for producers and the increase in product capture for processors through on-farm animal health improvements will help to double the value of red meat. The researcher provided expertise in the field of veterinary science by assisting to turn complex information into relevant, palatable content that producers can interpret and utilise to make significant and impactful changes on farm to improve overall carcase compliance and performance.

Eating quality

MSA audit and training services 2021–22

Project code	L.MSI.2201	**Location**	National
Start date	1 July 2021	**Vendor**	AUS-MEAT Limited
End date	30 June 2022	**Funding source**	Levy
Publication date	*18 January 2024*	**Initiation of research**	Industry
This project was for the management of the MSA audit and training services for 2021–22. The program was put in place to audit MSA licensees to verify compliance to MSA standards and maintain the integrity of the program. Audits cover wholesalers, retail, food service outlets, supermarkets, independent boning rooms and saleyards. It provides for a maximum of 566 audits.			

MSA auditing and training services 2022–23

Project code	L.MSI.2301	**Location**	National
Start date	1 July 2022	**Vendor**	AUS-MEAT Limited
End date	30 June 2023	**Funding source**	Levy
Publication date	*18 January 2024*	**Initiation of research**	Industry
This project was for the management of the MSA audit and training services for 2022–23. The program was put in place to audit MSA licensees to verify compliance to MSA Standards and maintain integrity of the program. Audits cover wholesalers, retail, food service outlets, supermarkets, independent boning rooms and saleyards. It provides for a maximum of 206 audits.			

IT Services Maintenance Agreement 2021–22

Project code	L.MSG.2203	**Location**	National
Start date	1 October 2021	**Vendor**	Apheta Data Solutions
End date	30 March 2023	**Funding source**	Levy
Publication date	*24 January 2024*	**Initiation of research**	Industry
This project involved the MSA program, which has several standalone IT programs that are outside the general support commitment from the corporate MLA IT team. The consultant was responsible for providing ongoing support to existing MSA IT systems, including self assessment, end user and producer training, online ordering systems, and SQL (structured query language) database servers linked to INFOSYS (information systems).			

MSA Annual Outcomes Report 2021–22

Project code	L.MSA.2302	**Location**	National
Start date	1 July 2022	**Vendor**	Cox Inall Communications
End date	19 August 2022	**Funding source**	Levy
Publication date	*October 2022*	**Initiation of research**	Industry
This project was for the coordination and design of the *MSA Annual Outcomes Report 2021–22*.			

MSA Business development in Western Australia

Project code	L.MSA.2206	**Location**	Western Australia
Start date	1 September 2021	**Vendor**	The Meat Specialist
End date	31 August 2022	**Funding source**	Levy
Publication date	*24 January 2024*	**Initiation of research**	Industry
The purpose of this project is to support the MSA implementation plan and five-year strategic plan through the identification and implementation of business development opportunities in Western Australia.			

MSA Meat Science course 2021–22

Project code	L.MSA.2208	**Location**	National
Start date	1 September 2021	**Vendor**	Western Analytics Pty Ltd
End date	24 June 2022	**Funding source**	Levy
Publication date	*17 January 2024*	**Initiation of research**	Industry
This project involved consultants delivering a two week-long MSA Meat Science training course. The MSA meat science course offers industry participants an opportunity to learn about the scientific factors affecting the eating quality of red meat from production through to consumer with a focus on beef and sheepmeat.			

myMSA and Data Capture Unit Application maintenance services

Project code	L.MSG.2202	**Location**	National
Start date	1 October 2021	**Vendor**	Data in Motion Pty Ltd
End date	30 March 2023	**Funding source**	Levy
Publication date	*24 January 20234*	**Initiation of research**	Industry
This project provided MSA system, MLA staff and system vendor support in relation to the myMSA databases and Data Capture Unit Application.			

Support and maintenance of myMSA

Project code	L.MSG.2201	**Location**	National
Start date	1 October 2021	**Vendor**	Management for Technology Pty Ltd
End date	30 March 2023	**Funding source**	Levy
Publication date	*24 January 2024*	**Initiation of research**	Industry
This project provided support, maintenance and further developments to the myMSA system.			

Feedbase production

Scoping study for soil management in livestock grazing system

Project code	B.PAS.0009	**Location**	National
Start date	14 May 2022	**Vendor**	CRC for High Performance Soils Ltd
End date	31 August 2023	**Funding source**	Levy
Publication date	*14 November 2023*	**Initiation of research**	Industry

This project involved the initial step by MLA to develop a business case and investment plan for soil-related research, development, extension, and adoption (RDE&A) projects to provide sustainability and productivity benefits for red meat producers. A scoping study to meet MLA's requirements and to review previous studies, reports, literature, and other information was also commissioned by the Soil CRC (Cooperative Research Centre).

The review was extensive, covering outputs and outcomes from soil-related MLA investments over the past 10 years, significant changes in relevant soils based RDE&A over the past 10 years, regional soil constraints and opportunities, a review of international and national policies and frameworks, and several specific areas requiring more detail.

Pasture Trial Network – Phase 3 development

Project code	P.PSH.2138	**Location**	Southern Australia
Start date	09 November 2021	**Vendor**	Pasture Trial Network Ltd
End date	15 June 2022	**Funding source**	MLA Donor Company
Publication date	*29 September 2023*	**Initiation of research**	External partnership

This project represented the third stage of a collaborative partnership between MLA and the Pasture Trial Network (PTN) that has been ongoing since 2011. The partnership funds the conduct of joint trials between seed companies to help producers and their advisors assess which are the best-performing varieties for a range of pasture species. Since its inception, the PTN has enabled livestock producers, advisors, and supply chain stakeholders to make more informed decisions about forage variety selection.

High Value Food Frontiers

A horizon scan of sustainable red meat packaging: what's new, innovative, and ready to market

Project code	V.RMH.0127	**Location**	National
Start date	09 September 2021	**Vendor**	Prof Consulting Group Pty Ltd
End date	13 November 2021	**Funding source**	Levy
Publication date	*21 January 2022*	**Initiation of research**	Industry

This project recognised the global focus on sustainability and the ongoing challenges regarding the environmental impact of red meat consumption. The intent of this review was to deliver a horizon scan of red meat packaging. The project was tasked with identifying innovative solutions new to market, industry leading solutions commercially applied in international markets, and to provide the Australian red meat industry with valuable tools to further define their packaging strategy as consumer focus on the environment continues.

Review of pressurised CO2 technology (Farther Farms) and its ability to reduce reliance on a chilled supply chain – Literature review

Project code	V.RMH.0124	**Location**	National, International
Start date	20 August 2021	**Vendor**	Prof Consulting Group Pty Ltd
End date	15 October 2021	**Funding source**	Levy
Publication date	*2 December 2021*	**Initiation of research**	Industry

This project recognises that to achieve MLA's strategic objective to double the value of Australian red meat by 2030, it is critical to keep abreast of new and emerging technologies that have the potential to unlock access to new high value markets for 'fresh' meat. Effective horizon scanning enables MLA to capitalise on and invest in high potential areas of innovation and development to deliver strong commercial outcomes with industry partners. Recognising the significant cost of operating a chilled supply chain and reaching high potential global markets such as the Middle East and Europe, the initial claims associated with this technology potentially offer a solution to this challenge. MLA commissioned Prof. Consulting Group to investigate Farther Farms' pressurised CO2 technology and recommend how it could be of benefit to the Australian red meat industry.

Exploring impact acceleration through venture development: Thrive-MLA upcycled collagen for the USA market

Project code	V.RMH.0129	**Location**	National
Start date	30 May 2022	**Vendor**	SVG Partners LLC
End date	30 July 2022	**Funding source**	Levy
Publication date	*14 October 2022*	**Initiation of research**	Industry

This project engaged SVG THRIVE to design a collaborative venture-development model between SVG and MLA, and connected MLA with key ingredient stakeholders to help validate MLA's UpcycleCo business model assumptions – specially as it relates to Australian beef and sheep collagen powder. As part of MLA's High Value Foods Frontier Program, upcycling by-products from red meat production into quality functional ingredients is a key focus area. MLA is looking to partner with tech inventors, incumbent processors and ingredient companies to realise the opportunity to transform hides/skins into functional quality collagen ingredients. The business model on how best to create and capture value is fundamental to the design of MLA's UpcycleCo investment case.

Innovation capability building

Accelerating ag-tech adoption by South Australian red meat producers

Project code	P.PSH.1363	**Location**	South Australia
Start date	15 December 2021	**Vendor**	Farmers2Founders
End date	30 June 2022	**Funding source**	MLA Donor Company
Publication date	*9 April 2024*	**Initiation of research**	External partnership

The purpose of this pilot project was to develop and test a new Red Meat Accelerated ag-tech adoption framework with selected South Australian red meat producers and ag-tech solution providers. The objective was to address key challenges that have been identified as inhibiting ag-tech adoption.

Building red meat producer-led value-adding business ventures

Project code	P.PSH.1372	**Location**	National
Start date	1 February 2022	**Vendor**	Farmers2Founders
End date	31 October 2022	**Funding source**	MLA Donor Company
Publication date	*15 September 2023*	**Initiation of research**	External partnership

The aim of this project's investment was to develop the awareness, knowledge and confidence of red meat producers to enable them to build scaleable value-added ventures that increase carcase value and deliver increased revenue back into their farming businesses.

Farmers2Founders – Phase 3

Project code	L.PIF.0003	**Location**	National
Start date	31 July 2021	**Vendor**	Farmers2Founders
End date	30 September 2022	**Funding source**	Levy
Publication date	*1 May 2024*	**Initiation of research**	Industry

This project's overarching purpose was for Farmers2Farmers (F2F) to deliver a unique support system designed to attract and develop proactive, innovative Australian primary producers looking to grow and transform their businesses through cutting edge innovation and adoption of new technologies. F2F aims to develop producer entrepreneurship and technology capabilities so they can solve critical industry challenges and successfully bring new ag-tech, foodtech, and food ventures to market.

Faster fresher flows in red meat food processing

Project code	P.PSH.1376	**Location**	National
Start date	1 February 2022	**Vendor**	Retail Ready Operations
End date	30 June 2023	**Funding source**	MLA Donor Company
Publication date	*15 April 2024*	**Initiation of research**	External partnership

This project proposal sought to customise TilliT, an open-source software application designed to achieve faster, fresher flows in food processing and logistics specific to red meat. The goal of the project was to reduce the order cycle time to retail shelf by one day, reducing store markdowns by 10%, releasing latent outbound capacity by 17% while also optimising pallet and layer efficiencies to reduce transport costs and greenhouse gas emissions. The general business rules and methodologies employed are available to share with the wider red meat industry through a final report.

Development and delivery of capability building modules for the MLA Co-Innovation program

Project code	V.RMH.0126	**Location**	National
Start date	1 August 2021	**Vendor**	Hargraves Institute
End date	30 June 2022	**Funding source**	Levy
Publication date	*2 November 2022*	**Initiation of research**	Industry
MLA supports innovation across the red meat sector by co-funding innovation managers for a term of three years. This project supported the performance of these managers in their roles by providing a qualified service provider to develop innovation capability resources and to assist in running co-innovation network meetings.			

Hargraves Institute development and delivery of capability building modules for the MLA Co-Innovation program

Project code	V.RMH.0131	**Location**	National
Start date	15 August 2022	**Vendor**	Hargraves Institute
End date	30 June 2023	**Funding source**	Levy
Publication date	*17 April 2024*	**Initiation of research**	Industry
This project involves MLA's requirement for a qualified service provider to develop content, plan and deliver four network meetings (digital and face to face) and conduct surveys of program performance for MLA.			

Horizon scholarship: Cohort 11

Project code	L.STU.2202	**Location**	National
Start date	29 August 2021	**Vendor**	AgriFutures
End date	01 January 2022	**Funding source**	Levy
Publication date	*29 March 2023*	**Initiation of research**	Industry
This project relates to a scholarship which has been developed to entice, support and retain the next generation of a skilled and capable red meat workforce. The goal of the scholarship is to enhance the future supply of graduates available for employment in the red meat sector. The scholarship addresses the current and predicted under supply of graduates to meet growing demand for graduates in primary industries. The AgriFutures Horizon Scholarship is awarded to students studying an agriculture-related undergraduate degree or a science, technology, engineering, maths/finance (STEM) degree with relevant majors which align to agriculture.			

Segmentation of Australian meat processors and value adders – key findings

Project code	L.ARL.0001	**Location**	National
Start date	26 June 2022	**Vendor**	Circ Consulting
End date	30 November 2022	**Funding source**	Levy
Publication date	*12 July 2023*	**Initiation of research**	Industry
This project conducted a processor segmentation study to develop several key personas and frame key attitudes towards market and technology advancements and barriers for innovation adoption. Understanding manufacturers' risk appetite and drivers to trial and adopt new product and process innovations that grow demand more so than improve operational excellence is an underlying aim of this research for both MLA and AMPC. That is, at different innovation horizon stages (what's now/next/possible) and/or market/technology readiness, it is assumed that different needs and communication and adoption plans will be needed and segmenting the industry with these insights will better engage them and drive change as described in the Red Meat Industry Strategic Plan 2030.			

Integrity systems sub-program

Animal Identification Technology Roadmap

Project code	V.ISC.2037	**Location**	National
Start date	18 July 2021	**Vendor**	KPMG Australia
End date	10 May 2022	**Funding source**	Levy
Publication date	*9 August 2022*	**Initiation of research**	Industry

The NLIS Animal Identification Technology Approval Program Operational Framework project was undertaken to meet the evolving standards of the red meat industry by designing and documenting the service delivery model, associated processes and the financial considerations of the NLIS Animal Identification Technology (AIT) Approval program. Project scope included:

1. Review of the proposed program operational framework and implementation plan
2. Assessment of the feasible program service delivery framework options, including cost and resourcing models
3. Identification of core processes to support ISC's preferred delivery framework
4. Documentation of core processes per scope item 3
5. Development of a suggested pricing model for the program.

Bespoke supply chain eNVD adoption plan

Project code	V.ISC.2200	**Location**	National
Start date	16 February 2022	**Vendor**	CMA Trading Trust
End date	1 July 2022	**Funding source**	Levy
Publication date	*23 January 2024*	**Initiation of research**	Industry

This project supports the delivery of ISC's adoption of electronic National Vendor Declarations (eNVDs), using consultants to understand and co-develop programs to drive uptake of digital consignments in the Australian red meat supply chain.

Developing an agreed approach to livestock identification and NLIS statuses for vaccinates

Project code	V.ISC.2303	**Location**	National
Start date	12 December 2022	**Vendor**	Agsecure Investment Australia
End date	30 June 2023	**Funding source**	Levy
Publication date	*7 August 2023*	**Initiation of research**	Industry

This project facilitated a workshop with key industry stakeholders represented through the Supply Chain Taskforce to establish an agreed industry position on the mechanisms for physical identification for livestock that have been vaccinated in line with AUSVETPLAN arrangements for foot-and-mouth disease (FMD) and lumpy skin disease (LSD). It also developed an agreed approach and business rules for National Livestock Identification System (NLIS) database statuses (both property based and individual animal) that can be fed into national discussions with state and territory governments and SAFEMEAT.

FMD crisis simulation

Project code	V.ISC.2040	**Location**	National
Start date	7 August 2022	**Vendor**	Phoenix Resilience Pty Ltd
End date	15 December 2022	**Funding source**	Levy
Publication date	*23 January 2024*	**Initiation of research**	Industry

The purpose of this project was to conduct a crisis response simulation for foot-and-mouth Disease (FMD) to test the roles and responsibilities of ISC and MLA during an Emergency Animal Disease (EAD) response, the communication channels with industry and government (including SAFEMEAT), and to identify any gaps or weaknesses that should be addressed within ISC, MLA or external crisis response plans to ensure any potential risks related to a successful response, are mitigated in advance.

IT security standards and governance

Project code	V.ISC.2116	**Location**	National
Start date	1 September 2021	**Vendor**	Solista Pty Ltd
End date	28 October 2021	**Funding source**	Levy
Publication date	*20 September 2022*	**Initiation of research**	Industry
This project involved Integrity Systems Company seeking to develop a set of documented security baselines to form part of their IT Security Standards and Governance procedures. These baselines were to ensure consistency is met across all cloud, networks, infrastructure, applications, and databases, whether they are built internally or by third party vendors. This will look to strengthen ISC's audit and risk obligations as well as the expectations of their stakeholders.			

Livestock Production Assurance (LPA) program rules update

Project code	V.ISC.2215	**Location**	National
Start date	31 July 2022	**Vendor**	Schuster Consulting Group Pty Ltd
End date	14 April 2023	**Funding source**	Levy
Publication date	*11 December 2023*	**Initiation of research**	Industry
This project conducted a review of the LPA program rules and developed a modernised set of rules for the administration of the LPA program that satisfies the current and future LPA requirements, whilst supporting the broader red meat integrity system strategic direction.			

IT Quality Assurance capability uplift

Project code	V.ISC.2133	**Location**	National
Start date	31 October 2021	**Vendor**	Planit Test Management Solutions
End date	24 January 2022	**Funding source**	Levy
Publication date	*20 September 2022*	**Initiation of research**	Industry
This project involved the ISC Technology team beginning an internal discovery and evaluation process to assess its Quality Assurance Management and Test Automation capability. This resulted in a Request for Proposal with seven providers and the ultimate selection of one. However, in parallel, the team also embarked upon a capability uplift programme (Project Prodigy) to move to a formal and unified end-to-end continuous IT product development and improvement platform. It was decided that this broader review was necessary to complete first, which would lead to a higher quality and more tailored QA project. Now complete, Project Prodigy delivered a number of recommended improvements to team structure, roles and responsibilities, skill gaps, training, building new ways of working and an uplift to ISC's QA management and Test Automation.			

Project Prodigy 2 – IT development capability implementation

Project code	V.ISC.2144	**Location**	National
Start date	28 February 2022	**Vendor**	Concentrix Catalyst Pty Ltd
End date	30 December 2022	**Funding source**	Levy
Publication date	*18 January 2024*	**Initiation of research**	Industry

This project involved Integrity Systems Company (ISC) looking forward to 2025 to ensure that it could continue to use technology, people and processes to support an effective, comprehensive and easy to use suite of products – the backbone of Australia's red meat integrity system. In conjunction with the recent restructure, the ISC Technology Team needed to evaluate its current internal software development ways of working, including capabilities, processes, and tools against the delivery of value to their customers. This evaluation was to reveal the gaps between the current state and what is needed to support ISC's continually evolving strategic goals. As a capability uplift program, this project sought to allow the team to move to a formal and unified end-to-end continuous IT product development and improvement platform starting from capturing and managing high level requirements/features, solution design, build/development, test management/automation and release management.

Updating the potential impact of foot-and-mouth (FMD)/bovine spongiform encephalopathy (BSE)/lumpy skin disease (LSD) outbreaks

Project code	V.SMA.0006	**Location**	National
Start date	15 July 2022	**Vendor**	Centre for International Economics
End date	27 January 2023	**Funding source**	Levy
Publication date	*27 February 2024*	**Initiation of research**	Industry

This project sought to update the potential economic costs for the red meat industry of an FMD/BSE outbreak, while adding the potential costs of LSD. This included updating the likelihood of an occurrence (especially for FMD and LSD), changes in market composition and competitor profiles, as well as the increased value of the product. BSE and contamination relevant assumptions were also reviewed. The results were to be used to update the ongoing 'top down' Excel evaluation model used for assessing the overall impact from the Integrity Systems sub-program.

Livestock export (research & development)

Comparison of Australian and international airfreight welfare requirements

Project code	W.RDE.0012	**Location**	International
Start date	1 February 2022	**Vendor**	Australian Livestock Export Corporation; Harris Park Group Pty Ltd
End date	30 June 2022	**Funding source**	Levy
Publication date	*8 March 2024*	**Initiation of research**	LEP

The project LEP R&D project W.RDE.0012 (Comparison of Australian and international airfreight welfare requirements) sought to compare domestic live export standards applicable to air freight, primarily Australian Standards for the Export of Livestock (ASEL) to international live export standards, primarily International Aviation Transport Association (IATA) Live Animal Regulations (LAR) to identify points of difference and scientific basis of these points.

Economic analysis of regulation in the livestock export industry

Project code	W.RDE.0005	**Location**	International
Start date	31 August 2021	**Vendor**	Ernst & Young
End date	30 June 2022	**Funding source**	Levy
Publication date	*8 March 2024*	**Initiation of research**	LEP

This project analysed the economic and business impacts of regulation on the livestock export industry, mapped the current regulatory compliance effort (including costs) of the livestock export industry against risks, assess the likely impacts/benefits of currently identified/planned reforms and how these could be maximised, and explored and identified additional or other priority reform opportunities.

Impact of the northern cattle export industry on the Australian economy

Project code	W.RDE.0009	**Location**	Northern Australia
Start date	8 December 2021	**Vendor**	ACIL Allen Consulting Pty Ltd
End date	30 June 2022	**Funding source**	Levy
Publication date	*5 March 2024*	**Initiation of research**	LEP

This project recognised that a detailed economics research and analysis project of the value and importance of the northern Australian live cattle trade was required to support industry to intimately understand and openly demonstrate its economic benefits. This project was identified by LiveCorp members as a high priority for industry.

The project aimed to ensure that the Australian public, as well as law makers and decision makers, understand the benefits that the livestock export industry brings to farm gate prices, improving animal welfare, and the Australian economy.

Livestock Export Industry 2022 Snapshot (survey)

Project code	W.RDE.0017	**Location**	National
Start date	6 October 2022	**Vendor**	Intuitive Solutions Pty Ltd
End date	30 June 2023	**Funding source**	Levy
Publication date	*21 March 2024*	**Initiation of research**	LEP

This project provided a short and sharp insight into the current priorities and sentiment of the industry to verify the livestock export industry (LEP) R&D priorities identified in 2021 remained priorities for the following year and into the near future. This survey can also be used to determine how effective current sentiments and extension strategies are. The intention is to give Industry a forum for current sentiments and or concerns and a structure for the LEP RD&E to respond or provide updates as appropriate.

Standardisation of export declarations

Project code	W.RDE.0003	**Location**	International
Start date	11 August 2021	**Vendor**	Unique Excellence Pty Ltd
End date	30 June 2022	**Funding source**	Levy
Publication date	*4 March 2024*	**Initiation of research**	LEP

This project, in order to support market access for exporters, aimed to improve regulatory efficiency and consistency by developing standardised documentation for declarations required for Australian livestock export, beginning with South-East Asian cattle markets.

The project involved a review of export documentation, and the associated regulations and regulatory structures, for selected major markets to clarify the regulatory requirements and understand the commercial implementation practices relating to export declarations.

Summary and quadrant analysis: Data stocktake, analysis and implementation roadmap

Project code	W.RDE.0016	**Location**	National
Start date	1 July 2022	**Vendor**	KPMG
End date	30 June 2023	**Funding source**	Levy
Publication date	*21 March 2024*	**Initiation of research**	LEP

This project provided further analysis and investigation in order to build capability around data collection, aggregation, analysis, sharing and use of data by:

- identifying data that is the most valuable, relevant, and needed in stakeholder decision making
- identifying data or sources of data to focus on as a priority for standardisation that would provide maximum user benefit
- conducting analysis of proposed future activities based on the difficulty of implementation and impact for supply chain stakeholders.

Supporting the implementation of the Livestock export industry exotic animal disease preparedness plan

Project code	W.RDE.0030	**Location**	National
Start date	4 April 2023	**Vendor**	Noetic Solutions Pty Ltd
End date	30 June 2023	**Funding source**	Levy
Publication date	*10 April 2024*	**Initiation of research**	Industry

This project, run through the R&D program, involved the Livestock Export Program developing and implementing the industry Incident Response Plan and Strategic Response Group (SRG). The SRG is a mechanism to bring together ALEC, LiveCorp and MLA (at the CEO or senior management level) to manage the industry level response to incidents/crises.

The SRG developed an action plan where there were key actions identified as requiring the support of the LEP RD&E program to:

- finalise the live export LSD Action Plan for use by SRG members, government (where applicable) and selected industry representative bodies, to ensure the industry has a functional and practical guide for progressing preparedness activities, and reference in the event of an incursion
- (if necessary) perform a detailed simulation to test the applicability and functionality of the action plan in a scenario such as ships on the water when LSD is hypothetically identified in Australia.

Updating shipping route data for the Heat Stress Risk Assessment model

Project code	W.LIV.2025	**Location**	International
Start date	20 August 2021	**Vendor**	University Corporation for Atmospheric Research (UCAR)
End date	1 June 2022	**Funding source**	Levy
Publication date	*7 March 2024*	**Initiation of research**	Industry

This project related to the current Heat Stress Risk Assessment (HSRA) model which relies on historical weather data for ship routes to port and port climatic data to predict risk. Uncertainty about the climatic conditions and variability makes ships sailing north of the equator at some times of the year at increased risk of heat stress. There is an imperative to update and better understand ship sailing routes and the risks of sailing all year round. This will help better manage sailing into poor climatic conditions and subsequently reduce the risk of heat exposure to livestock. This will include analysis of heat stress and cold stress risk for some shipping routes at various times of the year. This project delivered an updated validated data set of sailing routes to 63 ports that was then fed into the HSRA model as it underwent an upgrade simultaneously.

Uptake of training and animal health and welfare practices

Project code	W.RDE.0004	**Location**	National
Start date	15 August 2021	**Vendor**	National Meat Industry Training Advisory Council
End date	30 June 2022	**Funding source**	Levy
Publication date	*4 March 2024*	**Initiation of research**	LEP

This project recognised the need to encourage greater uptake of leading animal health and welfare practices across the livestock supply chain, due to its importance in reducing risks, increasing productivity and supporting industry sustainability.

The project aimed to identify key risks, required capabilities and the capacity for change that can be achieved through training and development along the livestock export supply chain. The outcome for this project was to have a sustainable training strategy, informed by best practice and learnings from other industries and in consideration of the livestock export industry's specific requirements. The use of the strategy would then enable 'whole of industry' management of key capabilities for individuals working across the supply chain.

Registered Establishment (RE) biosecurity plan update

Project code	W.RDE.0021	**Location**	National
Start date	2 December 2022	**Vendor**	AgStar Projects Pty Ltd
End date	30 June 2023	**Funding source**	Levy
Publication date	*5 March 2024*	**Initiation of research**	LEP

A key element of MLA project W.LIV.01902 included the development of 'Registered Premises Biosecurity Template' documents, including a brief Emergency Animal Disease (EAD) Action Plan. This document was reviewed in 2020 with the release of ASEL 3.0.

This project reviewed and updated these 'Registered Premises Biosecurity Template' documents to ensure they contain the most relevant and up-to-date information for Registered Establishment (RE) operators to adopt or to update their already developed biosecurity plans.

Livestock genetics

Genetic Insights Report 2022

Project code	L.GEN.2205	**Location**	National
Start date	14 April 2022	**Vendor**	Kynetec Australia Pty Ltd
End date	27 August 2023	**Funding source**	Levy
Publication date	*05 September 2023*	**Initiation of research**	Industry

This project built on learnings from market research conducted in 2016 and 2020 to provide up-to-date insights into the use of EBVs and ASBVs in the Australian Beef and Sheep industry. The project also formed an understanding of barriers to the use and uptake of these and other genetic tools. This information was broken down across species and production regions in the country (i.e. sheep and beef, northern use of EBVs vs southern use of EBVs).

Market access science

Implementation of cold chain management for toll processing customers

Project code	P.PIP.0592	**Location**	National
Start date	10 February 2022	**Vendor**	Australian Country Choice
End date	31 July 2022	**Funding source**	MLA Donor Company
Publication date	*08 June 2023*	**Initiation of research**	Commercial partnership

This project implemented cold chain tracking technology for one processor and its customers to validate cold chain performance. Prediction of shelf life for brand owners is expected to reduce claims and improve product quality for end user customers. Methods for improving cold chain performance and the benefits were documented.

Market scan for Australian origin of Australian labelled product

Project code	P.PSH.1343	**Location**	International
Start date	14 December 2021	**Vendor**	Oritrain Australia Pty Ltd
End date	27 April 2022	**Funding source**	MLA Donor Company
Publication date	*26 October 2022*	**Initiation of research**	Commercial partnership

This project estimated the extent of product substitution in two markets by taking a collection of samples of red meat labelled Australian, in market, and using the database created by Oritain through project P.PSH.1170, to analyse the samples and determine unequivocally if the meat is Australian. Oritain tests for the innate chemical 'fingerprint' in products (focusing on trace elements and isotopes) which ties them to their geographical, production or manufacturer origin. Currently, there is no objective market data available to inform the prevalence of fraud and counterfeiting of Australian red meat in export markets (other than anecdotal) and it is a challenge for any action or mitigation strategies to be developed as both the supply chains and extent of the issue are unknown.

Molecular risk assessment of Salmonella in red meat

Project code	V.MFS.0460	**Location**	International
Start date	30 November 2021	**Vendor**	CSIRO
End date	28 November 2023	**Funding source**	Levy
Publication date	*17 October 2023*	**Initiation of research**	Industry

This project recognises that Salmonellosis remains a significant public health issue, and foods of animal origin are most frequently considered to be the vehicle through which humans are infected. Regulatory authorities in the US are considering changes to their position on Salmonella which may require a response from Australian exporters. This work will characterise Salmonella isolated from red meat sources using approaches emerging from the US regulator to prepare industry and government to respond to expected regulatory changes.

Supply chain integrity analysis

Project code	V.MFS.0459	**Location**	National
Start date	15 December 2021	**Vendor**	McKinna El Al
End date	31 May 2022	**Funding source**	Levy
Publication date	*2 April 2024*	**Initiation of research**	Industry

This project recognises that strong supply chain integrity is believed to be the result of a reduced number of steps, and strong relationships across the chain. Consumers believe that product in high end retailers, with few steps between processor and final customer, has implicit trust, whereas product in low transparency wet markets requires scrutiny. This project described the supply chains and relationships that exist between Australian processors/exporters and the final retail customer. The research focused on exploring the proposition that there is a middle market where consumers are still prepared to pay a slightly higher price for enhanced integrity in both export and domestic markets. MLA hypothesises that such segments exist and technological solutions to providing information and assurances may add value to these mid-tier segments.

Technical advisor: Antimicrobial resistance

Project code	V.MFS.0458	**Location**	International
Start date	1 August 2021	**Vendor**	Coombe Consulting Pty Ltd
End date	31 July 2022	**Funding source**	Levy
Publication date	*30 January 2024*	**Initiation of research**	Industry
This project recognises that antimicrobial resistance is an international One Health concern: extending to humans, animals and the environment. Resistance is associated with usage of antimicrobials and their stewardship by animal industries. It promises to become a significant trade issue. The purpose of this consultancy was to assist MLA in planning, investigating and communicating aspects of the science, policy and strategy concerning industry's response to this issue.			

Objective measurement

Carcase analysis for lean meat yield measurement (DEXA) and cutting lines (Stage 3)

Project code	P.PSH.1344	**Location**	National
Start date	30 November 2021	**Vendor**	Nuctech Sydney Pty Ltd
End date	29 October 2022	**Funding source**	MLA Donor Company
Publication date	*26 September 2023*	**Initiation of research**	External partnership
This project relates to NUCTECH's design, manufacture and installation of a commercial small footprint DEXA system in an Australian abattoir. This project assessed the precision and accuracy with which the NUCTECH DEXA can predict CT fat, and lean and bone % in lamb carcases. The NUCTECH DEXA system predicted lamb carcase CT fat, lean and bone% with high precision, and this high precision was maintained when prediction equations were trained and validated in subsets of the data. The validation process also demonstrated that NUCTECH DEXA predictions are highly accurate.			

Producer adoption

Back to Business program impact evaluation

Project code	L.ADP.2203	**Location**	National
Start date	18 October 2021	**Vendor**	Beattie Consulting Services Pty Ltd
End date	18 July 2022	**Funding source**	Levy
Publication date	*18 October 2022*	**Initiation of research**	Industry
This project came about in response to the devastating impact of the 2019–20 bushfires on Australian red meat producers. MLA launched the Back to Business program in January 2020 to provide support to producers for the journey to recovery. This project produced an impact assessment of the Back to Business program to assess the effectiveness of program delivery and to quantify the triple bottom line benefits attributable to producers who made practice changes due to participation in the program, and also provided recommendations for future recovery programs.			

Sustainability (off-farm)

Development of a web version of the SB-GAF calculator tool

Project code	L.SFP.1015	**Location**	National
Start date	30 September 2022	**Vendor**	Servian Pty Ltd
End date	30 June 2023	**Funding source**	Levy
Publication date	*15 March 2023*	**Initiation of research**	Industry

This project's investment goal was to enable growth in the value of and trust in Australian grassfed beef products and their production through demonstrating environmental credentials. The problem being addressed was the absence of a national online web based version of the Sheep and Beef Greenhouse Accounting Framework (SB-GAF) tool for Australian red meat producers to complete a carbon account/emissions baseline. It was suggested that MLA should invest because the Environmental Credentials Information Technology Platform is crucial to achieving the milestones outlined in the Smart Farming Partnership Grant, which MLA is leading through the Environmental Credentials of Grassfed Beef Project. The SB-GAF tool is a required data source for the platform.

Sustainability (on-farm)

Carbon EDGE technical manual

Project code	L.ADP.2033	**Location**	National
Start date	9 October 2022	**Vendor**	Environmental Accounting Services Ltd
End date	29 July 2023	**Funding source**	Levy
Publication date	*29 November 2023*	**Initiation of research**	Industry

This project acknowledges that a Carbon EDGE training program would equip producers with the knowledge and skills to create a carbon account and formulate a customised plan to address emissions and production benefits at an enterprise level. This investment funded the development of the Carbon EDGE deliverer manual, including a full review and gaps analysis of current practices available to producers. The deliverer manual was made to be used by the partner project, Carbon EDGE package development.

Greenhouse gas footprint of the Australian red meat production and processing sectors – 2019

Project code	B.CCH.1016	**Location**	International
Start date	14 April 2022	**Vendor**	CSIRO
End date	28 April 2022	**Funding source**	Levy
Publication date	*21 July 2022*	**Initiation of research**	Industry

This project recognises that the red meat industry contributes to Australia's national greenhouse gas (GHG) emissions. In a previous project (B.CCH.7714), a method was developed to quantify GHG emissions from red meat production based on the UNFCCC Australian National GHG Inventory. Annual updates to these calculations enable the industry to track changes in emissions attributed to red meat.

Know and show your carbon footprint – Discovery

Project code	L.AIA.0001	**Location**	National
Start date	27 March 2023	**Vendor**	Agricultural Innovation Australia
End date	29 April 2023	**Funding source**	Levy
Publication date	*11 July 2024*	**Initiation of research**	Industry
The purpose of this discovery project was to develop in-depth understanding of the current pain points and commodity-specific needs of the growers, commercial players and solution providers in demonstrating their carbon footprint. This will inform further development of a digital solution that enables farmers, fishers and foresters (growers) to estimate their enterprise's carbon footprint and make better informed decisions to reduce emissions and capture new opportunities.			

Rural Research & Development for Profit (RRDfP) 'Forewarned is Forearmed' climate coaching for on-farm decision making

Project code	B.CCH.8305	**Location**	National
Start date	2 January 2023	**Vendor**	Charles Sturt University; Pinion Advisory
End date	30 June 2023	**Funding source**	External Partnership and levy
Publication date	*26 April 2024*	**Initiation of research**	Industry
The project extended the R&D outputs of the Forewarned is Forearmed project outputs – namely the five new Bureau of Meteorology forecast products for extreme events, the e-learning product and the risk management decision making criteria. A coaching/training program will be developed and piloted in the areas covered by the Southern NSW Drought Hub.			

Rural Research & Development for Profit 'Forewarned is Forearmed' final monitoring and evaluation

Project code	B.CCH.8304	**Location**	National
Start date	17 July 2022	**Vendor**	Acre Economics
End date	28 February 2023	**Funding source**	External Partnership and levy
Publication date	*6 May 2024*	**Initiation of research**	Industry
The output of this project was a final monitoring and evaluation report for the project Forewarned is Forearmed (FWFA): equipping farmers and agricultural value chains to proactively manage the impacts of extreme climate events. The project under evaluation ran from mid 2017 to the end of 2022 and is to provide, amongst other outputs, five new Bureau of Meteorology forecast products for extreme events in the weeks, months and seasons ahead.			

Value proposition model – Emissions reduction projects

Project code	F.EVA.1808	**Location**	National
Start date	1 August 2021	**Vendor**	AbacusBio Pty Ltd
End date	1 August 2022	**Funding source**	Levy
Publication date	*23 April 2024*	**Initiation of research**	Industry
This project involved the development of a value proposition model for emissions reduction projects. The model will serve as a tool to enable consistent and objective investment decisions for projects investigating technologies targeting emissions reductions in livestock such as new feed varieties and feed additives. The model will complement the current MLA assessment and evaluation framework which will serve as an input to this model.			

R&D projects in progress

Animal wellbeing

NSW DPI RNA vaccine investment

Project code	P.PSH.1444	**Location**	National
Start date	1 February 2023	**Vendor**	NSW Department of Primary Industries
End date	31 January 2029	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project develops the engagement of the American biotechnology company (Tiba Biotech) through project P.PSH.1400. NSW DPI will also engage further subcontractors, including ACDP and other animal health institutions with appropriate expertise to develop a mRNA vaccine pipeline for lumpy skin disease (LSD), Border Disease Virus (BDV), foot-and-mouth (FMD) (O and A strains), BVDV 2 and potentially other emergency diseases.

Rapid establishment of capacity to produce an efficacious and registered mRNA vaccine for LSD is the highest project priority. This will provide the Australian cattle and other ruminant industries with insurance against an imminent biosecurity threat that would have far reaching trade, animal health and economic implications.

Transport Hub – Building and navigating the road ahead

Project code	B.AWW.0011	**Location**	National
Start date	19 December 2022	**Vendor**	Forest Hill Consulting
End date	15 November 2023	**Funding source**	Levy
Initiation of research	Industry		

This project recognises that Livestock movement via road transport in Australia is necessary and is common practice for most livestock operations. Nearly all Australian livestock are transported at least once during their lives. Approximately 40 million sheep, cattle and goats are transported annually in Australia – many over relatively short distances within their region (<500km), but also over large interstate distances of long duration (>1,000km). Regardless of trip duration, common risks and issues apply. Transport represents a critical phase in animal production, as it has the potential to negatively impact productivity and product quality, resulting in economic loss and sub-optimal animal welfare. Monitoring, maintaining and continually improving standards during livestock transport are essential to achieving optimal animal welfare and economic outcomes.

Digital agriculture

eSAT Global – Radio module and system for real-time remote monitoring and communications

Project code	P.PSH.1359	**Location**	National
Start date	10 March 2022	**Vendor**	eSAT Global Inc
End date	30 August 2023	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

The project further developed eSAT Global's proposed Radio Frequency Integrated Circuit (RFIC) connectivity chip set. This is a low-cost next-generation communications system device connectivity enabler, that may fundamentally change the economics of connectivity and the implementation of ag-tech Internet of Things (IOT) solutions.

SkyKelpie drone regulatory and adoption support – Stage 2

Project code	P.PSH.1491	**Location**	National
Start date	1 September 2023	**Vendor**	SkyKelpie Pty Ltd
End date	1 December 2025	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project will provide the Australian grazing industry – the country's largest sector in agriculture – with a more cost effective and safe alternative for its key operational activity, the mustering of livestock. The project will deliver this by:

1. Addressing the regulatory barriers that are holding innovation back
2. Providing a low-risk pathway for industry training and skills development
3. Resolving the operational range limit of standard drones, an issue currently limiting their effectiveness
4. Importantly, making drone mustering opportunities available to everyone in the industry
5. Building on the successful trials from 2022 and addressing recommendations from the final report
6. Exploring alternative use cases for drones in Australian agriculture.

Foragecaster project

Project code	P.PSH.1484	**Location**	National
Start date	25 September 2023	**Vendor**	Agriwebb Pty Ltd
End date	1 October 2026	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This MDC project aims to deliver the following tools for Australian red meat producers via MyMLA – 50,000 users, AgriWebb – 14,000 users/25% of herd and flock, and Cibo Labs – 2,500 users:

- automated input into MLA Carbon Calculator (SB-GAF) using AgriWebb producer profiles
- inclusion of key pasture quality metrics (e.g. protein, digestibility, metabolisable energy) in the Australian Feedbase Monitor and PastureKey products
- prediction of animal and pasture growth rates from current state based on historical, modelled and/or machine learning outputs
- development and integration of 'planner' (sandbox) capability for AgriWebb users
- benchmarking (and reporting to MLA) of key production values by region, stock and enterprise type.

Digital value chain information

myFeedback video and photography

Project code	V.ISC.2306	**Location**	National
Start date	10 May 2023	**Vendor**	Sound Images Pty Ltd
End date	30 November 2024	**Funding source**	Levy
Initiation of research	Industry		

This project will develop key video assets for the delivery of the myFeedback system. This work will develop 1x launch video, 6x how-to videos and 2x case study videos as well as 4x 15–30 second versions to be shared on social media. The launch video will aim to raise awareness and understanding of the value proposition of the myFeedback system. The 'how to' videos will assist in the adoption of the system amongst producers and processors. The case studies will demonstrate the valuable insights industry can gain from myFeedback and how those insights can lead to business change.

Australian Agricultural Data Exchange Phase 4 (establishment phase)

Project code	P.PSH.1497	**Location**	National
Start date	27 September 2023	**Vendor**	Charles Sturt University
End date	31 December 2025	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project relates to the Australian Agriculture Data Exchange (AADX) which will be an efficient, streamlined, and internationally recognised data infrastructure enabling greater insights for regulators that will stimulate sustainable innovation, consumer assurance, value-adding and export market access. Phase 4 (establishment phase) of the AADX project involves establishing the minimal viable product (MVP) of the data exchange. This project will novate the contract management services for Phase 4 of the AADX project to CSU, and for them to contract the project management office to deliver DAFF's National Agriculture Traceability RegTech Research and Insights grant. MLA will provide its contribution to Phase 4 of the AADX project through this project.

Supply chain digitalisation – Telstra IBM garage sprint

Project code	P.PSH.1446	**Location**	National
Start date	30 January 2023	**Vendor**	Telstra Ltd
End date	1 January 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project is a design sprint where Telstra and MLA will explore the value proposition(s) for supply chain digitalisation in the Australian red meat sector. Using the IBM garage model, a business case will be developed for new digital products that aim to improve decision making and reduce administration costs.

Eating quality

MSA auditing and training services

Project code	L.MSI.2401	**Location**	National
Start date	1 July 2023	**Vendor**	AUSMEAT Ltd
End date	31 December 2024	**Funding source**	Levy
Initiation of research	Industry		

This project is for the management of the MSA audit and training services until 31 December 2023. The program is in place to audit MSA licensees to verify compliance to MSA Standards and maintain integrity of the program. Audits cover multi-site end users, independent boning rooms and saleyards. It will provide a maximum of 99 audits across multi-site end users, saleyards and independent boning rooms.

myMSA and data capture unit application maintenance services FY24

Project code	L.MSG.2402	**Location**	National
Start date	1 October 2023	**Vendor**	Data in Motion Pty Ltd
End date	30 March 2025	**Funding source**	Levy
Initiation of research	Industry		

This project is to provide MSA system, MLA staff and system vendor support in relation to the myMSA databases and Data Capture Unit application for the next financial year.

IT Services Maintenance Agreement (Apheta) 2023–24

Project code	L.MSG.2403	**Location**	National
Start date	1 October 2023	**Vendor**	Apheta Data Solutions
End date	30 March 2025	**Funding source**	Levy
Initiation of research	Industry		

The MSA program has several standalone IT programs that are outside the general support commitment from the corporate MLA IT team. The consultant is responsible for providing ongoing support to existing MSA IT systems, including end user and producer training and admin portals, MSA producer reaccreditation support, online ordering systems and single sign-on integration.

Statistical data science for industry: Technologies, training, and capability building

Project code	L.EQT.2201	**Location**	National
Start date	1 October 2021	**Vendor**	Dr Pearly Harumal
End date	30 March 2025	**Funding source**	Levy
Initiation of research	Industry		

This project will support independent and expertise systems to statistically evaluate the MSA program, and where required and not included in other projects, the independent statistical evaluation of MSA research outcomes as identified. This project also supports the capability building of other industry stakeholders through data analysis training workshops, operated on a cost-recovery basis.

MSA business development in Western Australia

Project code	L.MSA.2306	**Location**	Western Australia
Start date	1 October 2022	**Vendor**	The Meat Specialist
End date	30 September 2024	**Funding source**	Levy
Initiation of research	Industry		

The purpose of this project is to support the MSA implementation plan and five year strategic plan through the identification and implementation of business development opportunities in Western Australia.

MSA end user training services and business development

Project code	L.MSA.2402	**Location**	National
Start date	1 September 2023	**Vendor**	K & K Payne Pty Ltd
End date	30 March 2025	**Funding source**	Levy
Initiation of research	Industry		

This project is responsible for MSA end user program business development. Furthermore, it involves collaboration with the MLA Food Service Domestic Marketing team to deliver MSA food service training master classes nationally, with the objective of raising awareness and educating national and global food service caterers.

Meat Science course November 2023 (Western Analytics)

Project code	L.MSA.2403	**Location**	National
Start date	1 October 2023	**Vendor**	Western Analytics Pty Ltd
End date	1 May 2024	**Funding source**	Levy
Initiation of research	Industry		

This project involves the consultants delivering one, week-long MSA Meat Science training course. The MSA Meat Science course offers industry participants an opportunity to learn about the scientific factors affecting the eating quality of red meat from production through to the consumer with a focus on beef and sheepmeat.

Red meat supply chain data systems and feedback mechanisms discovery

Project code	V.LDL.2303	**Location**	National
Start date	16 March 2023	**Vendor**	D.P. Meehan & L.F. Meehan
End date	29 March 2024	**Funding source**	Levy
Initiation of research	Industry		

This project involved a proposed discovery that included exploration into simplifying and streamlining data uploads for processors, an understanding of all industry program standards and requirements, data sources, and internal and external linkages as well as identifying recommendations on the options and implications associated with bringing all of MLA's current and future feedback services together in one single platform.

Feedbase production

Pasture Trial Network expansion

Project code	P.PSH.1469	**Location**	National
Start date	30 April 2023	**Vendor**	Pasture Trials Network Ltd
End date	30 September 2028	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project relates to the Pasture Trial Network (PTN) which provides objective measures to red meat producers and advisors in southern Australia using standardised pasture variety trials representing nearly all seed companies, overseen by a not-for-profit seed industry partnership (Pasture Trial Network Ltd), with part funding provided by Dairy Australia and MLA. The PTN currently operates in a limited number of environments, predominantly in Victoria, and requires expansion to achieve economies of scale and increased value and visibility to the red meat sector. It was suggested that MLA should invest so that more producers take advantage of the production gains in the order of $250–$350 per hectare available by using advanced 'proprietary' pasture varieties compared to outdated, generic varieties that have discounted seed prices.

High Value Food Frontiers – Research efficacy of fluid bed drying as an intervention to freeze drying to increase efficiencies, yields and ultimately competitive output of ovine and bovine 5th quarter products

Project code	P.PSH.1489	**Location**	National
Start date	9 October 2023	**Vendor**	Freeze Dry Industries Pty Ltd
End date	30 January 2026	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project, having successfully researched, trialled and launched a range of freeze dried red meat products, will test the efficacy of another supporting, precursor technology – fluid bed trying, to assess its ability to significantly improve the yields of products currently generated from freeze drying alone. Success in completing this research could see the increase in yields and productivity improve by up to 500%. This would see capacity increases from one ton per week to five tons and the dollar value (specifically for collagen) of production increase from $40,000 ($40 x 1,000kgs) per week to $150,000 ($30 x 5,000kgs) per week. From a raw material input perspective, one ton of finished collagen will have required approximately 340 hides as an input. Success in this research will see the same freeze drying capacity being able to process in excess of 1,500 hides per week.

Rabobank Foodbytes Corporate Accelerator FY22–23

Project code	V.RMH.0130	**Location**	National
Start date	20 June 2022	**Vendor**	Rabobank; Tomorrow Studio Ventures Pty Ltd
End date	4 December 2023	**Funding source**	Levy
Initiation of research	Industry		

This project followed on from the successful participation with Rabobank as part of V.RMH.0117 – Rabobank MLA Future of Food Corporate Accelerator 2020–21. MLA engaged Rabobank again to conduct the scanning of new technology start-ups capable of influencing positive outcomes for Australia's red meat sector. The vetting of suitable candidates and access to Rabobank's venture studio will ensure a greater chance of commercial success and industry adoption.

Mincing words: Valorisation of mince beef through nutrient/functional formulation

Project code	P.PSH.1388	**Location**	National
Start date	3 June 2022	**Vendor**	AgResearch Ltd; DIJ Strategy
End date	24 November 2023	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project involved the delivery to early adopters in the Australian Meat Industry – of a prototype of nutrient/functionally-enhanced mince as well as a process for producing and rapidly characterising such a mince. This was formulated on knowledge gathered from the mapping of Australian beef of the nutrients and functionalities relevant to the Australian meat consumer.

Assessing priority biogas opportunities within the dairy and meat industries

Project code	V.MFS.0006	**Location**	Victoria
Start date	1 July 2023	**Vendor**	Dairy Australia Ltd
End date	30 June 2024	**Funding source**	Levy
Initiation of research	Industry		

This project follows om from the MLA Waste 2 Profit cross sectional program – a smaller collaborative program lead by Dairy Australia and will assess co-digestion opportunities from animal industry feedstocks in regional areas. The project will map hotspots, particularly in regional areas, for the development of bioenergy projects based on co-digestion of waste streams from the dairy, red meat, pork and chicken meat industries.

The food tech Tasmanian accelerator (2022–2024)

Project code	P.PSH.1385	**Location**	Tasmania
Start date	10 June 2022	**Vendor**	Startupbootcamp
End date	1 June 2025	**Funding source**	MLA Donor Company
Initiation of research	External partnership		
This project involves Startupbootcamp (SBC) designing and delivering the food tech Tasmanian program for three years. This MDC project with (SBC) secures a minimum of six pilots to be undertaken during 2022–2024 as part of the FoodTech Tasmania Accelerator. Startups will be scouted and mentored to develop and test proof-of-concepts across key themes such as upcycled meat and meat by-products streams, functional ingredients derived from red meat components and advancements in novel packaging formats.			

Validating the Australian collagen opportunity in the US market

Project code	P.PSH.1387	**Location**	International
Start date	1 April 2022	**Vendor**	Freeze Dry Industries Pty Ltd
End date	2 December 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		
The goal of this research project is to validate the bovine collagen products by successful sales to US customers. This in turn, creates an export pathway of new, high value consumer goods for the benefit of the red meat industry. Ultimately, the success of this project completes the cycle for the bovine collagen MDC research and development by proving scale and commercialisation.			

Industry leadership and capacity building

Enhancing the health, wellbeing, resilience and performance of red meat producers

Project code	L.CAP.0001	**Location**	National
Start date	1 December 2022	**Vendor**	Farmers Health Promotion Collaborative
End date	15 July 2023	**Funding source**	Levy
Initiation of research	Industry		
This project aimed to evaluate the merits of applying The Ford Health Index (a biometric model) to better understand and identify role models who exhibit positive 'mental and physical wellbeing and resilience' traits amongst red meat producers as well as to provide a high-level overview of the current state of play along with a 'pulse check' for this area of study and interest amongst stakeholders for potential further research.			

Australian beef industry foundation leadership scholarship

Project code	P.PSH.1383	**Location**	National
Start date	10 May 2022	**Vendor**	Australian Beef Industry Foundation; Australian Rural Leadership Foundation
End date	15 September 2025	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

The scholarship will enable 18 scholars over a three-year period to participate in the Marcus Oldham rural leadership program. The Marcus Oldham leadership program, which commenced in 1992, is recognised as one of the longest running rural leadership programs in the nation. It has developed a strong reputation in the agricultural and agribusiness sector, attracting support from a wide range of industry and rural community groups from diverse regional backgrounds.

Nuffield Scholarship – FY 2022/2023/2024

Project code	L.STU.2201	**Location**	National
Start date	30 September 2021	**Vendor**	Nuffield Australia Farming Scholarships
End date	31 December 2024	**Funding source**	Levy
Initiation of research	Industry		

This project involves the Nuffield Scholarship(s), which is awarded annually to the best Australian Livestock Producer candidate (scholar), determined by Nuffield Australia after consideration of applicants' written applications and State and National interviews. Scholars will research innovative global concepts, techniques and systems that will hopefully create positive change in their own businesses, communities and the broader agriculture sector. The scholarship(s) will be granted and administered by Nuffield Australia.

Innovation capability building

Hargraves Institute development and delivery of capability building modules for the MLA Co-Innovation program

Project code	V.RMH.0008	**Location**	National
Start date	1 August 2023	**Vendor**	Hargraves Institute Pty Ltd
End date	29 August 2024	**Funding source**	Levy
Initiation of research	Industry		

This project involves MLA supporting innovation across the red meat sector by co-funding innovation managers for a term of three years. To improve the performance of these managers, MLA requires a qualified service provider to develop content, plan and deliver four network meetings (digital and face to face) and conduct surveys of program performance for MLA.

Australian Intercollegiate Meat Judging (ICMJ) 2021–2026 program

Project code	P.PSH.1370	**Location**	National
Start date	1 December 2021	**Vendor**	Australian Intercollegiate Meat Judging Association Inc
End date	15 December 2026	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project involves the Australian Intercollegiate Meat Judging (ICMJ) Association Inc – a not-for-profit association with a mission to 'inspire and develop future professionals in the global red meat industry'. The ICMJ program provides opportunities for students to gain exposure to all aspects of the red meat industry with the aim of developing intelligent, trained, and enthusiastic graduates to increase the capacity and competitiveness of the Australian meat industries into the future.

Herd XL livestock management and marketing decision support app and web app development

Project code	P.PSH.1448	**Location**	National
Start date	20 February 2023	**Vendor**	XL Ag Innovations Pty Ltd
End date	30 December 2023	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project developed a simple and effective mobile and web application that puts the power of comprehensive spreadsheets into the hands of producers – simplifying complex decisions and allowing producers to compare different options, highlighting the net on-farm profit differences between potential scenarios. The outcome being that producers can use this tool to make more measured livestock decisions allowing them to retain more profit.

Horizon Scholarship: Cohort 13

Project code	L.STU.2301	**Location**	National
Start date	15 January 2023	**Vendor**	AgriFutures Australia
End date	16 December 2024	**Funding source**	Levy
Initiation of research	Industry		

This project involves the Horizon Scholarship which has been developed to entice, support and retain the next generation of a skilled and capable red meat workforce. The goal of the scholarship is to enhance the future supply of graduates available for employment in the red meat sector. The scholarship addresses the current and predicted under supply of graduates to meet growing demand for graduates in primary industries. The AgriFutures Horizon Scholarship is awarded to students studying an agriculture-related undergraduate degree or a science, technology, engineering, maths/finance (STEM) degree with relevant majors which align to agriculture.

Future Livestock Consultants – Phase 4

Project code	P.PSH.1352	**Location**	National
Start date	1 December 2021	**Vendor**	Meridian Agriculture Pty Ltd
End date	21 June 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project involves Future Livestock Consultants 4, which aims to address the issue of extension service delivery decline by developing the consultancy capability to fill the gap in service provision. This program will develop the capability of an additional 10 co-funded interns to deliver CN30 and NB2 extension programs. At the end of the two-year program, interns will have developed skills to allow them to deliver MLA adoption programs, positively contribute to the strategic goals of CN30 and NB2 programs and successfully work as red meat industry consultants (with a focus on northern beef or sustainability).

ARLP Scholarship course 29/30/31

Project code	L.STU.2203	**Location**	National
Start date	30 October 2021	**Vendor**	Australian Rural Leadership Foundation
End date	15 December 2025	**Funding source**	Levy
Initiation of research	Industry		

This project involves the Australian Rural Leadership Program (ARLP) – a high impact, immersive experiential learning program focused on the development of leadership for individuals and collectives who are contributing to the future prosperity of rural and regional Australia. The project will support the development of industry leadership and MLA ambassadorship through supporting an annual scholarship in the ARLP from October 2021–December 2025.

Coles RROA Collaborative Innovation program manager

Project code	P.PSH.1332	**Location**	National
Start date	1 September 2021	**Vendor**	Retail Ready Operations Australia
End date	1 April 2025	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project's investment goal is to develop and implement an innovation program that focuses on processor automation and the development of high value products for new markets and channels. This agreement will support an Innovation Program Manager to implement the Coles RROA collaborative innovation strategy, which aligns to MLA strategic priorities and builds capability in the business.

2024 SparkLabs Cultiv8 partnership program

Project code	P.PSH.1486	**Location**	National
Start date	1 November 2023	**Vendor**	SparkLabs Cultiv8 Pty Ltd
End date	1 November 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project recognises that MLA requires a balanced portfolio of strategic investments. Increased engagement with the global entrepreneurial community is required to attract higher growth disruptive innovation. Global partnerships with accelerators and incubators are a proven pathway of attracting high quality start-ups and identifying emerging innovations. This accelerator partnership with Sparklabs Cultiv8 will have a focus on scouting and accelerating the commercialisation of high impact innovations in the following areas: natural capital and biodiversity, circularity, data and connectivity, automation and robotics, climate adaptability and emissions, health and wellness, energy transition and adoption, and animal and crop productivity.

Zanda McDonald Award Scholarship

Project code	P.PSH.1334	**Location**	National
Start date	2 August 2021	**Vendor**	The Zanda McDonald Award Association Inc
End date	25 December 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project involves MLA and the Zanda McDonald Award Association having agreed to partner under a collaborative research program to support and further develop the Zanda McDonald Award program for a three-year period. The investment forms part of the Innovation Capability sub program industry leadership imperative – developing enhanced leadership capability and developing impactful industry leaders and ambassadors for MLA.

Integrity systems sub-program

Bespoke eNVD adoption for livestock transporter

Project code	V.ISC.0002	**Location**	National
Start date	20 February 2023	**Vendor**	Agrigrowers Management Pty Ltd
End date	30 June 2024	**Funding source**	Levy
Initiation of research	Industry		

This project was developed in the context that historically, the livestock transport sector has not been a stakeholder group that MLA/ISC has previously had strong relationships, or connections with. It is, however, a key intermediary between the electronic National Vendor Declaration (eNVD) creator and receivers. Moving to digital consignments has implications for the way transport companies receive and manage eNVDs and this project will build on prior industry engagement with the transport sector to understand their specific needs for adoption of eNVD. The project also supports the consultant to understand and co-develop programs that drive uptake of digital consignments in the Australian livestock transport sector.

Bespoke supply chain eNVD adoption plan 2.0

Project code	V.ISC.2210	**Location**	National
Start date	15 June 2022	**Vendor**	Pinion Advisory Trust
End date	30 May 2024	**Funding source**	Levy
Initiation of research	Industry		

This project recognises that digital consignments will strengthen the red meat integrity systems. The project supports the adoption of electronic National Vendor Declarations (eNVDs) into red meat supply chains by using consultants to understand and co-develop programs that drive uptake of digital consignments in the Australian red meat supply chain.

Supply chain eNVD adoption implementation

Project code	V.ISC.2224	**Location**	National
Start date	18 November 2022	**Vendor**	Chris Murphy
End date	15 June 2024	**Funding source**	Levy
Initiation of research	Industry		

This project enhances the robustness of the red meat integrity systems by supporting adoption and integration of electronic National Vendor Declarations (eNVDs) into supply chains, thus driving uptake of digital consignments. This project will work with red meat supply chain stakeholders to drive adoption and integration of eNVDs into their ways of working.

Animal transport biosecurity and traceability pilot

Project code	P.PSH.1420	**Location**	National
Start date	1 October 2022	**Vendor**	Exoflare Pty Ltd
End date	30 April 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project relates to ExoFlare's 'Transport app' which is currently being trialled within the pork industry to collect real-time information on truck journeys and conditions, in order to produce a detailed and traceable digital record of animal movement between producers, transporters, and processors. The purpose of this project is to adapt and demonstrate Exoflare's transport app within the cattle and sheep industry.

Integrity System: Roles and responsibilities

Project code	V.ISC.2401	**Location**	National
Start date	28 August 2023	**Vendor**	ACIL Allen Consulting Pty Ltd
End date	31 October 2023	**Funding source**	Levy
Initiation of research	Industry		

This project related to a review of ISC which was completed to determine if ISC was delivering against its originally stated remit. The review found that ISC was delivering against its remit but there was confusion amongst stakeholders in terms of understanding policy leadership within the integrity systems. This project completed a review of the integrity system governance framework to clearly define and document the roles and responsibilities of parties involved in integrity system policy development and leadership, and the processes for consultation, decision making and implementation.

Integration of eNVD into Thorsys Australia software

Project code	P.PSH.1478	**Location**	National
Start date	1 July 2023	**Vendor**	Thorsys Australia Pty Ltd
End date	15 September 2023	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

The purpose of this project was to support Thorsys Australia in integrating eNVD web and application data into their abattoir system software (Production Inventory Control System (TPICS2)). The integration of eNVD data into Thorsys' system aimed to provide participating processors the ability to extract its maximum value, whilst contributing to the implementation of end-to-end digitisation of eNVD and support supply chain adoption of the eNVD tools.

Adoption strategy

Project code	V.ISC.2315	**Location**	National
Start date	31 December 2023	**Vendor**	Chris Murphy
End date	30 June 2024	**Funding source**	Levy
Initiation of research	Industry		

This project relates to the Integrity Systems 2025 & Beyond plan (IS2025 plan) vision for an integrity system trusted globally as underpinning a quality product, produced to a rigorous standard, and embedded in the culture of Australian livestock management. This project will deliver an integrated adoption strategy and implementation plan for ISC to support the achievement of the ISC2025 goals and to enable industry to obtain impact from the integrity system.

Stakeholder consultation on the NLIS database rules

Project code	V.ISC.2206	**Location**	National
Start date	18 April 2022	**Vendor**	Schuster Consulting Group Pty Ltd
End date	1 May 2024	**Funding source**	Levy
Initiation of research	Industry		

This project will facilitate a formal consultation process with industry and government stakeholders on the revised NLIS database rules. The consultant will establish a process for capturing and assessing feedback from stakeholders on the NLIS database rules and will incorporate updates to the NLIS database rules based on feedback received from stakeholders, in consultation with ISC.

Red meat industry supply chain integrity action plan

Project code	V.ISC.2229	**Location**	National
Start date	1 May 2023	**Vendor**	Agsecure Investment Australia
End date	28 June 2024	**Funding source**	Levy
Initiation of research	Industry		

The purpose of this project is to drive the implementation of actions identified by red meat industry stakeholders that will improve red meat industry supply chain integrity. The implementation of the identified actions (through responsible agencies) will minimise the risk of, and impact from, potential supply chain incidents that could harm the product integrity reputation of Australia's red meat industry. This project will also facilitate a workshop with red meat industry stakeholders 12 months after the action plan implementation commences, to discuss and assess progress and review any challenges in implementation.

Implantable RFID for cattle: Commercial supply chain trials

Project code	V.RDA.0005	**Location**	National
Start date	1 October 2022	**Vendor**	The Growth Drivers Pty Ltd
End date	31 December 2024	**Funding source**	Levy
Initiation of research	Industry		

This project recognises that implantable RFID (radio frequency identification) devices have the potential to be a reliable identifier for traceability. Based on the positive results that came out of the limited field trials completed under V.RDA.0004; it was recommended that further supply chain trials were undertaken to expand on this work to address the remaining adoption barriers for an implantable RFID device. This project will undertake two separate trials with 250–500 animals per site across different geographical locations (southern or northern) over an 18-month period.

Real-time, data-driven approach to assessing networked biosecurity risk

Project code	V.RDA.2102	**Location**	National
Start date	30 August 2021	**Vendor**	Exoflare Pty Ltd
End date	31 March 2024	**Funding source**	Levy
Initiation of research	Industry		

The purpose of this project was to contribute to developing a real-time data driven approach to assessing biosecurity risks in the red meat and pork sectors, and builds on the work completed under the V.RDA.2021 Cross-sector Operational Biosecurity Risk Assessment (COBRA) platform. The project will contribute funding to this broader project to cover the expert interviews so as to determine the barriers and opportunities for data sharing between government and industry to advise the COBRA data integration project plan.

Livestock export (research & development)

Livestock Export Program (LEP) RD&E Independent Chair

Project code	W.RDE.0034	**Location**	National
Start date	1 July 2023	**Vendor**	LiveCorp
End date	30 June 2026	**Funding source**	Levy
Initiation of research	LEP		

This project involves the Independent Chair which holds a dual role as the Chair of both the LEP RD&E LERDAC and Management Committee, with the primary responsibility of facilitating the meetings, upholding governance of the RD&E program and ensuring the objectives of each committee are met to enable high quality delivery of the RD&E program.

Supply chain transparency: 360 reality project

Project code	W.RDE.0035	**Location**	National
Start date	7 September 2023	**Vendor**	The Livestock Collective
End date	30 June 2024	**Funding source**	Levy
Initiation of research	LEP		

This project will update the virtual reality (VR) technology media assets currently available, to communicate about the livestock export industry.

Supporting the implementation of the livestock export industry exotic animal disease preparedness plan on the water

Project code	W.RDE.0029	**Location**	National
Start date	4 April 2023	**Vendor**	AusVet Pty Ltd
End date	30 June 2024	**Funding source**	Levy
Initiation of research	LEP		

This project, through the R&D program, involved the LEP developing and implementing the industry Incident Response Plan and Strategic Response Group (SRG). The SRG is a mechanism to bring together ALEC, LiveCorp and MLA (at the CEO or senior management level) to manage the industry level response to incidents/crises.
The SRG developed an action plan where there were key actions identified as requiring the support of the LEP RD&E program to:

- develop a protocol and guidelines for dealing with a potential suspected LSD or FMD infection on a vessel in transit
- develop an SOP on using a livestock export vessel as a quarantine facility either while awaiting discharge at a destination country or in the vicinity of an Australian port.

Managing effluent waste from livestock export vessels for environmental sustainability

Project code	W.RDE.0031	**Location**	International
Start date	11 April 2023	**Vendor**	University of New England
End date	30 June 2024	**Funding source**	Levy
Initiation of research	LEP		

This project relates to the livestock export industry's involvement in the transport of livestock by sea to overseas markets and the washing of pad and faecal materials from the vessel – an important component of effectively managing animal welfare and biosecurity. Ship-owners and masters ensure that these processes are done in accordance with international maritime requirements. However, the livestock export industry has the opportunity to proactively investigate how it could better manage these processes to minimise environmental risk and communicate/demonstrate that it is meeting or ahead of community expectations.
This project builds upon previous LEP RD&E projects including:

- LIVE.221 – Characteristics and volume of effluent produced by livestock vessels
- LIV.0290 – Bedding management and air quality on livestock vessels – a literature review
- insights into bedding composition from the LEP project into stocking densities, ammonia and bedding.

Data standards and governance

Project code	W.RDE.0024	**Location**	International
Start date	19 April 2023	**Vendor**	LiveCorp; Square V Pty Ltd
End date	30 June 2024	**Funding source**	Levy
Initiation of research	LEP		

This project recognises that technology adoption and data sharing are increasing in speed and importance and the livestock export supply chain is still relatively new in the collection, storage and sharing of data with supply chain participants and the regulator. There is a need to create data standards for the livestock export supply chain to ensure that data collected, stored and shared is done in a conscious and standardised manner. The development of LiveCorp's LIVEXCollect system into an online application provides an opportune time to document data standards which take into account current and future data requirements. Data standards uniformly describe data according to the expectations of all data users.

Open innovation pipeline

Project code	W.RDE.0019	**Location**	International
Start date	22 November 2022	**Vendor**	Impact Innovation Group Pty Ltd
End date	30 June 2024	**Funding source**	Levy
Initiation of research	LEP		

This project relates to the Open innovation pipeline – which will enable a flexible and timely pathway for trialling potential solutions for emerging industry priorities/issues in the live export sector. The Open innovation program is an umbrella project to deliver multiple small-scale trials, governed by an approved governance structure and overseen by the LEP RD&E management. This project will enable the RD&E program to leverage existing solutions or provide avenues for novel solutions and technology through innovation scouts, assessments and Proof-of-Concept (PoC) projects to address industry priorities and needs. Successful PoC projects may then be further funded to provide a more mature or commercialised solution for industry adoption.

Vessel connectivity technology trials

Project code	W.RDE.0018	**Location**	International
Start date	25 October 2022	**Vendor**	LiveCorp
End date	30 June 2024	**Funding source**	Levy
Initiation of research	LEP		

This project relates to a program of work to investigate and trial connectivity solutions on board livestock vessels.

Develop observer training material for shipboard animal welfare surveillance

Project code	W.RDE.0026	**Location**	International
Start date	8 March 2023	**Vendor**	Canopi Online Pty Ltd
End date	30 June 2024	**Funding source**	Levy
Initiation of research	LEP		

The LEP's Animal Welfare Indicators (AWI) and Shipboard Animal Welfare Surveillance (SAWS) projects have identified the critical starting list of animal welfare indicators for recording and monitoring by the trade. These are a combination of resource and animal-based measures that when viewed in combination, provide a holistic insight into the welfare status of animals involved. An effective system to record this suite of information can be deployed when livestock observers have been suitably trained in the measurement and recording of these animal welfare indicators. This project will deliver training materials and strategy for the welfare indicators collected as part of shipboard welfare and performance monitoring, recording and management. Training will be focused on upskilling veterinarians, stockpersons and other lay observers.

Supporting the implementation of the livestock export industry exotic animal disease preparedness plan

Project code	W.RDE.0030	**Location**	International
Start date	4 April 2023	**Vendor**	Noetic Solutions Pty Ltd
End date	30 June 2023	**Funding source**	Levy
Initiation of research	LEP		

Through the R&D program, this project relates to the LEP-developed and implement industry Incident Response Plan and Strategic Response Group (SRG). The SRG is a mechanism to bring together ALEC, LiveCorp and MLA (at the CEO or senior management level) to manage the industry level response to incidents/crises.

The SRG developed an action plan where there were key actions identified as requiring the support of the LEP RD&E program to:

- finalise the live export lumpy skin disease (LSD) action plan for use by SRG members, government (where applicable) and selected industry representative bodies, to ensure the industry has a functional and practical guide for progressing preparedness activities, and reference in the event of an incursion
- (if necessary) perform a detailed simulation to test the applicability and functionality of the action plan in a scenario such as ships on the water when LSD is hypothetically identified in Australia.

Understanding community sentiment toward live exports – Phase 2

Project code	W.RDE.0033	**Location**	International
Start date	1 June 2023	**Vendor**	Voconiq
End date	30 June 2024	**Funding source**	Levy
Initiation of research	LEP		

This project recognises that the livestock industry is under increased media interest in the industry, and the public consultation processes that have been flagged will only increase the scrutiny. Phase 1 of the Community Sentiment Project involved conducting national, demographically representative surveys of the Australian community to understand attitudes toward the livestock export industry. Three surveys have been completed to date.

The findings so far have been invaluable in providing credible data to counter the statistics provided by groups against the trade, and in guiding LiveCorp, the LEP, ALEC and the industry in the development of communication, research and policy activities.

Phase 2 will continue the work of the previous consultant (Voconiq), using the same methodology to run surveys of 4,000+ people each time in early 2024, 2025 and 2026. Committing to Phase 2 of multiple year contracts has the benefit of continuity and engagement with the process for both industry and Voconiq (as opposed to individual contracts for each survey). It also allows for regular tracking of subtle changes in sentiment to ensure policies and communications are relevant.

This project will build upon the previous LEP RD&E project, LC.RDE.007 Community sentiment project (Voconiq).

Undertaking a life cycle assessment of the livestock export supply chain

Project code	W.RDE.0032	**Location**	International
Start date	26 May 2023	**Vendor**	Integrity Ag and Environment
End date	30 June 2024	**Funding source**	Levy
Initiation of research	LEP		

This project relates to a project (LIV.0352), undertaken in 2011 by the livestock export sector with CSIRO, to complete a life cycle assessment of the livestock export supply chain. The project looked at greenhouse gas emissions, water use, energy use and eutrophication. It is proposed that with the increasing focus on carbon from the community, trading partners and government, the livestock export sector should update its life cycle assessment. It is suggested that carbon/greenhouse gases would be the key focus. The project will start with phase 1, focused on updating the baseline figures, and a second phase to be potentially considered looking at a broader scope (e.g., food miles) and various 'what if' scenarios (such as comparisons to cold chains/processing etc).

Virtual reality stunning training resource

Project code	W.RDE.0025	**Location**	National
Start date	1 January 2023	**Vendor**	Virtually There Training Pty Ltd
End date	30 June 2023	**Funding source**	Levy
Initiation of research	LEP		

This project researched the potential of virtual reality (VR) technology for use in livestock stunning training to deliver and support better animal welfare outcomes in destination markets. Specifically, it was to trial and research the effectiveness of training (and benchmarking) local slaughtermen with VR tools to deliver consistently better slaughter outcomes, with a view to minimising negative animal welfare outcomes (i.e. mis-stuns and repeat stunning applications).

Registered Establishment (RE) biosecurity plan update

Project code	W.RDE.0021	**Location**	International
Start date	2 December 2022	**Vendor**	AgStar Projects Pty Ltd
End date	30 June 2023	**Funding source**	Levy
Initiation of research	LEP		

This project sits under the LEP R&D Management Agreement.

A key element of MLA project W.LIV.01902 included the development of 'Registered Premises Biosecurity Template' documents, including a brief Emergency Animal Disease (EAD) action plan. This document was reviewed in 2020 with the release of ASEL 3.0.

This project reviewed and updated these 'Registered Premises Biosecurity Template' documents to ensure they contain the most relevant and up-to-date information for Registered Establishment (RE) operators to adopt or to update their already developed biosecurity plans.

Livestock genetics

Building faster and improved genetic evaluation tools and systems

Project code	L.GEN.2204	**Location**	National
Start date	1 September 2021	**Vendor**	Animal Genetics and Breeding Unit
End date	31 March 2027	**Funding source**	Levy
Initiation of research	Industry		

Under this project, the genetic engine that has powered cumulative and permanent genetic gain in the Australian red meat industry will be amplified to meet industry demands for a bold future. Genetic evaluations for new traits such as methane output and novel measures of animal welfare and resilience, along with more specific measures of consumer acceptance and nutritional value traits will be developed. Furthermore, the systems will be developed to respond to demands of commercial farmers, including novel approaches to utilising genomic data that will empower multi-breed predictions, including faster analyses and methods for continuous evaluation with instant feedback for genotype-only data, and models for delivery to the full range of players in red meat value chains.

Impact assessment of MLA investment in genetic improvement

Project code	L.GEN.2401	**Location**	National
Start date	31 August 2023	**Vendor**	Bush Agribusiness Pty Ltd
End date	1 August 2024	**Funding source**	Levy
Initiation of research	Industry		

This project was developed in the context that MLA invests in numerous programs supporting the genetic improvement of beef and meat sheep. These include supporting the genetic evaluation systems such as BREEDPLAN, LAMBPLAN and MERINOSELECT, funding research into innovative genetic technologies, and providing training and extension to drive producer adoption of more productive and profitable genetics.

This project aims to develop a method to quantify the returns on investment in genetics at the farm domain. That is, the impact of genetic improvement will be estimated in terms of farm gate productivity and profitability. The method will align with MLA's Program Evaluation Framework.

Market access science

Preservation of meat products utilising Flavor Symmetry technology – True Essence proof-of-concept

Project code	P.PSH.1492	**Location**	International
Start date	1 December 2023	**Vendor**	True Essence Foods Inc
End date	1 December 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project involves a proof-of-concept to validate True Essence Foods' (TEF) technology for preserving meats for ambient supply chain while maintaining the original organoleptic profile of red meat using Flavor Symmetry technology. Flavor Symmetry utilises controlled-temperature, molecularly selective dehydration that operates under a closed, recirculating stream of air to protect food essence during dehydration, resulting in food with a fresh organoleptic profile and preserved volatile flavour compounds. TEF technology has demonstrated a reduction in water content of foods to less than 1% without impacting its organoleptic profile.

Secretariat for the Animal Industry Antimicrobial Stewardship Research, Development and Extension Strategy

Project code	V.MFS.0462	**Location**	National
Start date	1 March 2023	**Vendor**	Coombe Consulting Pty Ltd
End date	30 December 2026	**Funding source**	Levy
Initiation of research	Industry		

This project relates to the 'Animal Industry Antimicrobial Stewardship (AMS) Research, Development and Extension Strategy' (AIAS) – a collaboration between the red meat, pork, dairy, egg and chicken industries. This strategy is focused on prioritising RD&E that enhances AMS activities, rather than a sole focus on reduction in AMR (antimicrobial resistance) or AMU (antimicrobial use), which are already comparatively low internationally. The purpose of this contract is to provide for a secretariat for the coordination of Research & Development Corporation activity.

Technical advisor: Antimicrobial resistance

Project code	V.MFS.0003	**Location**	International
Start date	1 August 2022	**Vendor**	EMP Vetepi Pty Ltd
End date	30 June 2024	**Funding source**	Levy
Initiation of research	Industry		

This project recognises that antimicrobial resistance is an international One Health concern, extending to humans, animals and the environment. Resistance is associated with usage of antimicrobials and their stewardship by animal industries. It promises to become a significant trade issue. The purpose of this consultancy is to assist MLA in planning, investigating and communicating aspects of the science, policy and strategy concerning industry's response to this issue.

Reporting on real time conditions impacting red meat export packaging and products

Project code	P.PIP.0590	**Location**	International
Start date	30 November 2021	**Vendor**	Escavox Pty Ltd
End date	4 February 2024	**Funding source**	MLA Donor Company
Initiation of research	Commercial partnership		

This project aimed to test product and packaging for red meat exports through the use of real-time temperature and humidity data, combined with linking information such as photos of product and packaging on arrival.

Producer adoption

Carbon EDGE package development

Project code	L.ADP.2032	**Location**	National
Start date	1 September 2022	**Vendor**	Pinion Advisory Trust
End date	15 August 2024	**Funding source**	Levy
Initiation of research	Industry		

This project involves a Carbon EDGE training program which will equip producers with the knowledge and skills to create a carbon account and formulate a customised plan to address emissions and production benefits at an enterprise level. This investment would enable:

1. The development of the program (based on content provided through other CN30 projects)
2. Pilot testing
3. The training of program facilitators.

Southern Rangelands Grazing (EDGE) – Working Group – Walsh

Project code	L.ADP.2304	**Location**	South Australia
Start date	9 January 2023	**Vendor**	Range IQ Pty Ltd
End date	30 January 2024	**Funding source**	External Grant – Government of South Australia
Initiation of research	Industry		

This project recognised that there are currently very few regionalised training programs on offer to producers in the southern rangelands, particularly in relation to feedbase and grazing management. The L.ADP.2301 project proposes to fill that gap by adapting the existing EDGEnetwork Grazing Fundamentals package for the southern rangelands context. This sub-project engaged a developer/deliverer to participate in the project Working Group, contributing to the development of the package and the delivery of 11 workshops in SA.

Southern Rangelands Grazing (EDGE) – Working Group – Scammell

Project code	L.ADP.2305	**Location**	South Australia
Start date	9 January 2023	**Vendor**	Talking Livestock
End date	30 January 2024	**Funding source**	External Grant – Government of South Australia
Initiation of research	Industry		

This project recognised that there are currently very few regionalised training programs on offer to producers in the southern rangelands, particularly in relation to feedbase and grazing management. The L.ADP.2301 project proposes to fill that gap by adapting the existing EDGEnetwork Grazing Fundamentals package for the southern rangelands context. This sub-project engaged a developer/deliverer to participate in the project Working Group, contributing to the development of the package and the delivery of 11 workshops in SA.

Southern Rangelands Grazing (EDGE) – Trainee deliverer – Shields

Project code	L.ADP.2306	**Location**	South Australia
Start date	9 January 2023	**Vendor**	Agrista Pty Ltd
End date	30 January 2024	**Funding source**	External Grant – Government of South Australia
Initiation of research	Industry		

This project recognised that there are currently very few regionalised training programs on offer to producers in the southern rangelands, particularly in relation to feedbase and grazing management. The L.ADP.2301 project proposes to fill that gap by adapting the existing EDGEnetwork Grazing Fundamentals package for the southern rangelands context. This sub-project engaged a trainee deliverer to participate in the project Working Group, contributing to the development of the package and delivery of 11 workshops in SA.

EDGEnetwork support and coordination FY24–26

Project code	L.EDG.2401	**Location**	National
Start date	1 August 2023	**Vendor**	ETG Holdings Pty Ltd
End date	29 August 2025	**Funding source**	Levy
Initiation of research	Industry		

This project recognises the importance of the role of an EDGEnetwork coordinator, who supports the delivery of one of MLA's key short-term training programs, the EDGEnetwork. This program offers practical workshops to red meat producers across the management areas of business, feedbase and grazing land, breeding, nutrition, and sustainability. The coordinator is the key contact for the national network of deliverers and administrative teams and liaises with MLA to coordinate communication/promotion activities, Monitoring Evaluating and Reporting and technical updates to the material.

ParaBoss Phase III – Website management and producer communications and extension/adoption activities

Project code	P.PSH.1320	**Location**	National
Start date	1 July 2021	**Vendor**	Animal Health Australia
End date	30 June 2025	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project relates to ParaBoss, a national resource for sheep, goat and cattle parasite control in Australia. ParaBoss provides sources of information for major parasites through its suite of products including WormBoss, FlyBoss, LiceBoss and TickBoss. It is also a link for industry communication about major endemic ruminant parasites via monthly newsletters, factsheets and social media. ParaBoss leads the development of national best practice and industry information, training and extension tools for parasite management, and engages industry participation in this process. In this phase of the project, producers will also be engaged in face-to-face training workshops, webinars and Producer Demonstration Sites and through industry networking events.

National Wild Dog Action Plan coordinator 2023–2027

Project code	P.PSH.1490	**Location**	National
Start date	1 November 2023	**Vendor**	Invasive Animals Ltd
End date	30 June 2028	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project will deliver an increase in adoption of best practice wild dog management by red meat producers through awareness raising activities e.g. field days, wild dog management workshops and implementation of wild dog management plans over a three-year period. Increases in adoption of best practice wild dog management will be achieved for over 2,000 red meat businesses managing a minimum of 525,000 cattle, 225,000 sheep and 150,000 goats.

The potential of biomineral fertilisers to increase soil carbon sequestration

Project code	P.PSH.1356	**Location**	National
Start date	1 February 2022	**Vendor**	Pedaga Investments
End date	30 June 2025	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project will examine the ability of bio-mineral fertilisers to be used as a tool to reduce net carbon emission through increased soil carbon, as compared to conventional fertilisers. Analysis will be done on soil carbon, plant health and overall productivity and profitability in comparison with conventional best practice fertiliser use to assess this type of product as a possible alternative. An integrated R&D Producer Demonstration Site (PDS) model will be followed to allow trials to be conducted under scientific and commercial conditions, aiding in the knowledge transfer to producers and broader industry.

Productivity (off-farm)

Financial implications of using RCT® at a dual species plant – OTH v owned animals

Project code	P.PSH.1488	**Location**	National
Start date	1 April 2023	**Vendor**	Greenleaf Enterprises Pty Ltd; MPSC Australia Pty Ltd
End date	30 July 2023	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project calculated and modelled for Australian sheep and beef, the value of benefits per carcase types from using an updated processing aid, Rinse and Chill Technology ® (RCT®). The purpose of this project was to calculate the lost meat revenue to the supply chain due to consigned over-the-hook (OTH) animals not being rinsed using data from a dual species processing plant. Data to inform a potential OTH AUS-MEAT trim adjustment for the use of RCT® would unlock value capture back to producers up to $80/head in beef and $6/head in sheep.

Sustainability (on-farm)

CSP Module 1 – Sustainable pathways to CN30

Project code	B.CCH.2121	**Location**	National
Start date	1 July 2021	**Vendor**	University of Tasmania
End date	30 November 2026	**Funding source**	Levy
Initiation of research	Industry		

The investment goal of this project is to use design-led thinking and interactive workshops to provide producers with the understanding of regionally-specific greenhouse gas (GHG) emissions mitigation practices required to achieve production-led environmental outcomes. This investment addresses the lack of understanding of how GHG emissions mitigation practices affect production-led environmental outcomes, including effects of grazing on natural capital and biodiversity, which is a barrier to adoption of regionally specific management options that enable key grazing regions to contribute to CN30. MLA should invest in this project because the outcomes will (i) enable income diversification through environmental stewardship, (ii) improve adoption of practices leading to CN30 and (iii) continue progress towards CN30 for the sheepmeat and grassfed beef sectors.

Driving adoption of objective measurement of pasture biomass for Australian livestock producers

Project code	P.PSH.1336	**Location**	National
Start date	15 September 2021	**Vendor**	Apheta Data Solutions; Cibo Labs Pty Ltd; Oracle Customer Management Solution
End date	1 July 2025	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project is to provide an effective system to enable all MLA members to receive baseline feedbase biomass. The system needs to use Property Identification Codes (PICs) as a way of identifying their property area to define estimated feed on offer. The remote monitoring solution will be rolled out across Australia for use by all Australian red meat producers. The product is to be able to integrate into current MLA online platforms. Sustainable grazing practices that support the resilience of livestock businesses to improve productivity through effective feedbase management is a high priority across all regions. Technology advancements enable all producers to measure feedbase more accurately however connectivity, technology know how, and interpretation of data are some of the barriers to adoption of new technology opportunities. In order to create a new baseline for all producers, there is an opportunity to make a significant shift in the feedbase management through the provision of remote monitoring data. This project will commence with a pilot before delivering a system and service that can provide regular data for MLA members. Producers will only be able to access their own data related to their own property. MLA will only report data at an aggregated regional, state and national level protecting any commercial in confidence information.

Know and show your carbon footprint – Build 1

Project code	L.AIA.0002	**Location**	National
Start date	15 June 2023	**Vendor**	Agricultural Innovation Australia
End date	30 April 2024	**Funding source**	Levy
Initiation of research	Industry		

The objective of this cross-RDC project was to digitise and aggregate the existing GAF (Greenhouse Accounting Framework) calculators for all agricultural commodities and other calculators into a common, scalable, web-based platform. This investment will deliver the aggregation of GAF tools into a common, core digital infrastructure (the Platform), which will enable access by myMLA. This will be of particular interest for the goat and feedlot sector, as well as other commodities being digitised to a maturity to match SB-GAF. This means through myMLA integrating with AIA platform, our red meat producers will be able to do whole of enterprise carbon accounting.

GHG Model Phase 2 – Support, enhancement and GHG strategy review

Project code	F.EVA.1810	**Location**	National
Start date	30 April 2023	**Vendor**	AbacusBio Pty Ltd
End date	30 September 2024	**Funding source**	Levy
Initiation of research	Industry		

Phase 2 of this GHG project includes the following: Ongoing support, enhancement and updating of the Excel model, as well as further GHG impact assessments of MLA funded projects.

EAP – Developing NIR calibrations to screen for methane production

Project code	P.PSH.2014	**Location**	National
Start date	14 January 2023	**Vendor**	NSW DPI
End date	18 June 2026	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project will develop a Near Infrared Spectroscopy (NIRS) calibration to enable rapid and inexpensive identification of forages with lower methane emissions per unit of livestock product output, contributing to CN30. The project is part of the Climate Smart Forages Systems (CSFS) which collectively develops anti-methanogenic forages products outlined in the Emissions Avoidance Partnership (EAP). MLA should invest in this project because it will enable detection of forage-based differences in methane production per unit of livestock, which will be an important assessment tool to compare forages early in breeding programs and will complement work in other CSFS projects.

CN30 Integrated management systems

Project code	P.PSH.1333	**Location**	National
Start date	30 July 2021	**Vendor**	Integrity Ag and Environment; NSW DPI; Queensland University of Technology; Trish Kendall
End date	31 December 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project's investment goal is to ensure that outcomes from EAP and Carbon Storage Partnership projects can be used to build integrated management systems and frameworks (such as the Department of Industry, Science, Energy and Resource (DISER's) Livestock Emissions Framework) that support adoption by producers of activities that reduce net GHG emissions, improve productivity, and allow tracking of progress towards CN30 via the National Greenhouse Gas Inventory (NGGI). This investment will deliver peer reviewed papers, communications, accounting protocols captured in existing farm accounting tools, and algorithms, which are required to ensure that red meat industry stakeholders can be remunerated for, or profit from, adoption of methane mitigation and carbon storage technologies within the Australian system.

EAP – Impacts of climate extremes on the productivity, nutritional characteristics and persistence of perennial legumes and mixtures (PACE2)

Project code	P.PSH.2009	**Location**	National
Start date	1 May 2022	**Vendor**	Western Sydney University
End date	1 June 2026	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project will develop new critical knowledge into how to manage climate risk to optimise production-led environmental outcomes and achieve progress towards carbon neutrality, accounting for future and climate risks. It is part of the Climate Smart Forages Systems (CSFS) which collectively develops antimethanogenic forage products outlined in the Emissions Avoidance Partnership (EAP). MLA should invest in this project because developing forages that reduce enteric methane and increase productivity is one of three major product groups aiming to deliver on the CN30 target and it is vital to ensure that forage products are able to be grown in target regions into the future.

PLANET – Projecting Livestock, Agriculture, Nature, Ecology and Technologies, Australian data

Project code	P.PSH.1391	**Location**	National
Start date	1 May 2022	**Vendor**	Global Food and Agribusiness Network
End date	30 November 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project involves the 'Projecting Livestock, Agriculture, Nature, Ecology and Technologies' (PLANET) web-based interactive – a currently available tool that allows users to explore the intricate dynamics of the global and national food systems with validated and up-to-date publicly available primary data. This project will enhance and accelerate the development of modules within PLANET that demonstrate the Australian red meat production system, therefore assisting in appropriate representation in policy, commercial and scientific decision making informed by PLANET.

Carbon in action tool development

Project code	L.SFP.1020	**Location**	National
Start date	5 May 2023	**Vendor**	Servian Pty Ltd
End date	31 October 2023	**Funding source**	Levy
Initiation of research	Industry		

The 'Development of carbon management e-learning modules' project, delivered as an MDC-funded project by Greenham, produced three carbon e-learning modules. The overarching objective of this project was to increase the knowledge and understanding of greenhouse gas emissions, how they relate to livestock production systems and how producers can estimate and improve their carbon balance. The modules were targeted to both cattle and sheep producers in grassfed, mixed, temperate systems. The Environmental Credentials for Australian Beef project identified the need for an additional carbon e-learning module; Carbon in action (linking on-farm emissions and sequestrations (learning with data)). This investment saw the web development of a tool that supports producers who do not yet have sufficient data to use the MLA carbon calculator or SB-GAF. This module is embedded into MLA's e-learning Toolbox and the Environmental Credentials platform.

Farming for the Future

Project code	P.PSH.1389	**Location**	National
Start date	27 December 2021	**Vendor**	Macdoch Foundation Ltd
End date	5 January 2024	**Funding source**	MLA Donor Company
Initiation of research	External partnership		

This project involved Farming for the Future, whose goal is to design, build and test a completely novel prototype platform and decision-making framework that will link on-farm natural capital measures with benefits for farm businesses to deliver long-term economic, environment and social benefits, and provide a 'diagnostic' tool to inform farm business decision making. Its investment goal was to catalyse the large-scale adoption of technologies and practices for Australian red meat producers to increase revenue derived from natural capital management. This project addressed the decline in natural capital in Australia's grazing lands and the associated risk of reduced customer, consumer and community sentiment towards the red meat industry as a contributor to natural capital decline. It was suggested that MLA should invest as the potential outcomes and impact created will contribute to a number of the objectives under the MLA Strategic Plan 2025, in particular, enabling new sources of revenue and targeted investment to address the industry's big complex challenges, and the 'Our Environment' pillar in Red Meat 2030.

Updates to the MLA Carbon Calculator

Project code	L.SFP.1022	**Location**	National
Start date	30 May 2023	**Vendor**	Servian Pty Ltd
End date	30 December 2025	**Funding source**	Levy
Initiation of research	Industry		

The project goal is to include additional utility for the MLA Carbon Calculator built by Servian under L.SFP.1015 and L.SFP.1018. The additional utility is the inclusion of the Feedlot and Goat Greenhouse Accounting Framework spreadsheets, and calculation of carbon in remnant vegetation. The deliverable of this project will be an update calculator on the MLA tools and calculators web page. This calculator will also be embedded as a data source for the carbon balance credential on the Environmental Credentials platform. These updates are to be based on the SB-GAF version 2.3 and G-GAF version 10.8. It will also put in place data transformation processes to allow PowerBI to access the data and internal analysis to be carried out.

Completed PDS projects

Grassfed cattle

Project code	Project title	Start date	End date	Service provider	Location
L.PDS.1811	Weaner to yearling production pays off	30 June 2018	30 January 2021	Monaro Farming Systems	National

PDS projects in progress

Grassfed cattle

Project code	Project title	Start date	End date	Service provider	Location
L.PDS.2215	Optimising liver fluke management in cattle	14 April 2022	1 April 2026	University of Melbourne	National
L.PDS.2302	Demonstration of an in-paddock cattle weighing system	1 October 2022	31 October 2025	Stirlings to Coast Farmers Inc	WA
L.PDS.2304	Optimising age of weaning in cattle	1 December 2022	15 November 2026	Asheep and Beef Inc	National
L.PDS.2305	Utilising heifer pre-mating serology to manage BVD	1 December 2022	31 December 2026	Asheep and Beef Inc	National
L.PDS.2306	Preventing bull preputial breakdown by vaccination	1 December 2022	30 April 2026	Asheep and Beef Inc	National
P.PSH.2303	Unlocking Red Gum plains soil capacity	1 January 2023	31 December 2027	Gippsland Agricultural Group	Victoria

All grassfed species

Project code	Project title	Start date	End date	Service provider	Location
L.PDS.2303	Soil carbon to reach carbon neutral	1 April 2023	1 April 2029	Agriprove Pty Ltd	National
L.PDS.2201	Improved pasture management systems	1 January 2022	1 September 2025	Upper North Farming Systems	South Australia
L.PDS.2208	Testing tropicals – NSW southern slopes	1 November2021	1 June 2027	Holbrook Landcare Group	NSW
L.PDS.2209	Managing soil acidity in permanent pastures	31 January 2022	15 July 2028	Holbrook Landcare Group	NSW
L.PDS.2210	Feeding grain on grass	7 February 2022	20 May 2025	Local Land Services	NSW
L.PDS.2211	Controlling extreme weeds after extreme events	1 October 2021	1 June 2026	Department of Jobs, Precincts and Regions	Victoria
L.PDS.2213	Pasture monitoring in the rangelands	1 January 2022	1 August 2027	Local Land Services, NSW	Rangelands
L.PDS.2214	Healthy subsoils produce more red meat	1 November 2021	17 June 2029	Agridome Consultancy	Victoria

L.PDS.2216	PDS project development and coordination officer	16 March 2022	30 December 2025	AgStar Projects Pty Ltd	National
L.PDS.2301	Productive grazing with feed quality management	1 October 2022	31 March 2025	Perennial Pasture Systems	Victoria
L.PDS.2307	Carbon neutral 2030: Getting started on farm	1 December 2022	31 January 2027	Asheep and Beef Inc	National
L.PDS.2309	Using soil probes for seasonal preparedness	1 October 2022	15 May 2026	Department of Jobs, Precincts and Regions	Victoria
L.PDS.2312	Less mites, more feed	1 January 2023	20 December 2025	Agridome Consultancy	Victoria
L.PDS.2313	PDS National coordinator 2024–2025	1 April 2023	30 June 2025	Miracle Dog Pty Ltd	National

Sheep and lamb

Project code	Project title	Start date	End date	Service provider	Location
L.PDS.2206	Best practice management of non-mulesed sheep	25 January 2022	20 July 2026	Aggregate Consulting Pty Ltd	National
L.PDS.2202	Lotsa lambs – improving reproduction success	1 December 2021	28 August 2025	Upper North Farming Systems	South Australia
L.PDS.2203	Productive saltland pastures for southern WA	1 October 2021	1 January 2028	Gillamii Centre	Southern WA
L.PDS.2204	Which set up? Implementing confinement feeding	15 December 2021	1 March 2025	AgPro Management	WA
L.PDS.2212	More northern Mallee lambs on the ground	15 June 2022	15 August 2026	Department of Jobs, Precincts and Regions	Victoria
L.PDS.2308	Optimising ewe lamb joining outcomes	1 December 2022	30 June 2027	Sally Martin Consulting	NSW
L.PDS.2311	Confinement feeding and deferred grazing management system	1 January 2023	30 December 2024	Facey Group Inc	WA
P.PSH.2302	Sheep containment in focus	5 December 2022	11 November 2025	Elders Rural Services Ltd	SA
P.PSH.2305	More lambs from ewe lambs	1 November 2022	1 December 2025	J.T. Agri-Source Pty Ltd	Victoria

Completed PGS projects

Grassfed cattle

Project code	Project title	Start date	End date	Location
L.PGS.2123	Delivery of PGS SLP – Lead with Certainty	1 November 2021	1 December 2022	Northern Australia
L.PGS.2117	Development of PGS SLP – Improved Beef Market Compliance	1 November 2021	30 January 2023	National
L.PGS.2120	PGS SLP Delivery – Building Better Breeders AC Bundle	1 October 2021	1 December 2022	NSW
L.PGS.2129	PGS SLP Delivery Northern Bundle – Lead with Certainty	28 January 2022	27 January 2023	Northern Australia

Grassfed and grainfed cattle

Project code	Project title	Start date	End date	Location
L.PGS.2127	PGS Mentoring AJM Livestock Solutions	15 December 2021	15 December 2022	National
L.PGS.2128	PGS SLP Delivery – Building Better Breeders Riverina NSW	15 December 2021	15 December 2022	NSW

All grassfed species

Project code	Project title	Start date	End date	Location
L.PGS.2122	Delivery of PGS SLP – Pasture Principles King Island NRM	13 September 2021	1 December 2021	Tasmania
L.PGS.2113	PGS SLP Delivery – Benchmarking for Profit and Production WA	1 July 2021	30 September 2022	Western Australia
L.PGS.2125	PGS SLP Delivery – Improving Tactical Decision Making Packsaddle NSW	1 November 2021	30 June 2023	NSW
L.PGS.2119	Profitable Grazing Systems Package Development – Editing and design	1 September 2021	1 September 2022	National

All red meat species

Project code	Project title	Start date	End date	Location
L.PGS.2118	PGS State coordinator – New South Wales	15 August 2021	30 June 2022	NSW
L.PGS.2208	Profitable Grazing Systems Coordination officer	5 Aug 2022	28 February 2022	National

PGS projects in progress

Grassfed cattle

Project code	Project title	Start date	End date	Location
L.PGS.2308	PGS SLP Delivery – PayDirt North Farmacist Queensland	1 September 2023	8 December 2024	Queensland
L.PGS.2311	PGS SLP Delivery – Building Better Breeders Victoria	1 August 2023	24 December 2024	Victoria

Grassfed and grainfed cattle

Project code	Project title	Start date	End date	Location
L.PGS.2201	PGS SLP Delivery – Heifers for Profit national bundle	6 May 2022	28 June 2024	National

Goats

Project code	Project title	Start date	End date	Location
L.PGS.2124	PGS SLP Delivery – Getting Goats to Market Far West NSW	1 October 2021	1 October 2023	NSW

All grassfed species

Project code	Project title	Start date	End date	Location
L.PGS.2200	PGS SLP Delivery – PayDirt North – Northern bundle	31 March 2022	29 March 2024	Northern Australia
L.PGS.2309	PGS SLP Delivery – LevelUp	1 June 2023	15 November 2024	Southern Australia
L.PGS.2125	PGS SLP Delivery – Improving Tactical Decision Making Packsaddle NSW	1 November 2021	30 June 2023	NSW
L.PGS.2206	PGS SLP Delivery – Improving Tactical Decision Making Ivanhoe NSW	2 June 2022	31 December 2023	NSW
L.PGS.2302	PGS SLP Delivery – Grass to Dollars Riverina NSW	1 February 2023	30 September 2024	NSW
L.PGS.2307	PGS SLP Delivery – Pasture Principles bundle Tasmania	1 July 2023	7 October 2024	Tasmania
L.PGS.2310	PGS SLP Delivery – Grass to Dollars Victoria	1 August 2023	24 December 2024	Victoria

All red meat species

Project code	Project title	Start date	End date	Location
L.PGS.2210	PGS SLP Delivery – Business Essentials Hay NSW	1 November 2022	30 November 2023	NSW
L.PGS.2301	PGS SLP Delivery – Grass to Dollars Nutrien SA	1 February 2023	31 January 2025	SA
L.PGS.2305	PGS SLP Delivery – Grazing Matcher bundle WA	1 June 2023	31 December 2024	WA
L.PGS.2209	PGS Mentoring Agrista ITDM	21 October 2022	31 October 2024	National

Abbreviations

ABN	Australian Business Number
AACo	Australian Agricultural Company
AADX	Australian Agriculture Data Exchange
AAFDX	Australian AgriFood Data Exchange
ABSF	Australian Beef Sustainability Framework
ACC	Australian Country Choice
ACDP	Australian Centre for Disease Preparedness
AGRF	Australian Genome Research Facility
AHA	Animal Health Australia
AI	Artificial intelligence
AIA	Agricultural Innovation Australia
AIAS	Animal Industry Antimicrobial Stewardship
AIT	Animal identification technology
ALEC	Australian Livestock Exporters' Council
ALFA	Australian Lot Feeders Association
AMILSC	Australian Meat Industry Language and Standards Committee
AMPC	Australian Meat Processor Corporation
AMR	Antimicrobial resistance
AMS	Antimicrobial stewardship
AMU	Antimicrobial use
API	Application programming interface
APVMA	Australian Pesticides and Veterinary Medicines Authority
ARC	Australian Research Council
ARLP	Australian Rural Leadership Program
ARRB	Australian Road Research Board Limited
ASBV	Australian Sheep Breeding Values
ASEL	Australian Standards for the Export of Livestock
AWA	Australian Wagyu Association
AWI	Animal Welfare Indicators
BCC	Beef Classification Centre
BDV	Border disease virus
BFG	Bindaree Food Group
BIN	Beef Information Nucleus
BoM	Bureau of Meteorology
BRD	Bovine respiratory disease
BSE	Bovine spongiform encephalopathy
BVDV	Bovine viral diarrhea virus
CEO	Chief executive officer
CFSS	Climate Smart Forages Systems
CN30	Carbon Neutral by 2030
CO_2e	Carbon dioxide equivalent
COBRA	Cross-sector Operational Biosecurity Risk Assessment
CQ	Central Queensland
CRC	Cooperative Research Centres
CRC-P	Cooperative Research Centres Projects
CSFS	Climate Smart Forages Systems
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CSP	Carbon Storage Partnership
CSU	Charles Sturt University
CT	Computed tomography
DAF	Department of Agriculture (Queensland)
DAFF	Department of Agriculture and Fisheries
DCU	Data capture unit
DEXA	Dual x-ray absorptiometry
DISER	Department of Industry, Science, Energy and Resource
DITT	Department of Industry, Tourism and Trade
DM	Dry matter
DMI	Dry matter intake
DNA	Deoxyribonucleic acid
DPI	Department of Primary Industries
DPIR	Department of Primary Industry and Resources (NT)
DPIRD	Department of Primary Industries and Regional Development (WA)
DPO	Digital products officer
DSE	Dry sheep equivalent
DTS	Diathermic syncope
DWIT	Direct water injection technology
EAD	Emergency animal disease

EAP	Emissions Avoidance Partnership
EBV	Estimated breeding values
ECIT	Environmental Credentials Information Technology
EEQ	Excellence in Eating Quality
EMA	Eye muscle area
EMAI	Elizabeth Macarthur Agricultural Institute
ESG	Environmental, social, and corporate governance
ET	Embryo transfer
EU	European Union
FDI	Freeze Dry Industries
FMD	Foot-and-mouth-disease
FWFA	Forewarned is Forearmed
FY	Financial year
GBV	Genomic breeding values
GEBV	Genomic estimated breeding values
GFC	Geraldton Fishermen's Co-Operative
GHG	Greenhouse gas
GIRDAC	Goat Industry Research, Development and Adoption Committee
GLM	Grazing land management
GMP	Gundagai Meat Processors
GPS	Global Positioning System
HSRA	Heat Stress Risk Assessment
IATA	International Aviation Transport Association
ICMJ	Intercollegiate Meat Judging
IMF	Intramuscular fat
IOT	Internet of Things
ISC	Integrity Systems Company
IT	Information technology
IVF	In vitro fertilisation
KGF	Kilcoy Global Foods
LAR	Live Animal Regulations
LAWI	Lifetime animal wellbeing index
LEP	Livestock Export Program
LERDAC	Livestock Export Research and Development Committee
LESTR	Level of Emission Saliva Test for Ruminants
LPA	Livestock Production Assurance
LPP	Livestock Productivity Partnership
LSD	Lumpy skin disease
MDC	MLA Donor Company
MEQ	Meat eating quality
MER	Monitoring, Evaluation and Reporting
MLA	Meat & Livestock Australia
MMFS	Making More from Sheep
mRNA	Messenger RNA [Ribonucleic acid]
MSA	Meat Standards Australia
MVP	Minimal viable product
NABRC	North Australia Beef Research Council
NACP3	Northern Australia Climate Program 3
NATA	National Association of Testing Authorities
NAVG	North Australian Veterinary Group
NB2	Northern Breeding Business
NCMC	Northern Co-Operative Meat Company Ltd
NFI	Net Feed Intake
NGGI	National Greenhouse Gas Inventory
NIP	Nutrition information panels
NIRS	Near Infrared Spectroscopy
NLGC	National Livestock Genetics Consortium
NLIS	National Livestock Identification System
NMR	Nuclear magnetic resonance
NQ	Northern Queensland
NRM	Natural Resource Management
NSW	New South Wales
NT	Northern Territory
NVD	National vendor declaration
OM	Objective measurement
OTH	Over-the-hooks
PAAW	Productivity and animal wellbeing
PCR	Polymerase chain reaction
PDS	Producer Demonstration Site
PGS	Profitable Grazing Systems
PIC	Property Identification Code

PIRSA	Department of Primary Industries and Regions (SA)
PTN	Pasture Trial Network
QA	Quality Assurance
QDAF	Department of Agriculture (Qld)
QLD	Queensland
QPRP	Queensland Pasture Resilience Program
RCT	Rinse and Chill Technology
RDA	Research, development & adoption
RDC	Research and development corporation
RDE	Research, development and extension
RE	Registered Establishment
RFI	Request for Information
RFIC	Radio Frequency Integrated Circuit
RFID	Radio Frequency Identification
RFP	Request for proposal
RMP	Request for Market Pricing
RRDfP	Rural Research and Development for Profit
RROA	Retail Ready Operations Australia
SA	South Australia
SALRC	Southern Australia Livestock Research Council
SAWS	Shipboard Animal Welfare Surveillance
SB-GAF	Sheep and Beef Greenhouse Accounting Framework
SBC	Startup boot camp
SG	Sheep Genetics
SIT	Sterile Insect Technique
SKU	Stock keeping unit
SLP	Supported Learning Program
SMB	Southern Multi-Breed
SOC	Soil carbon sequestration
SOP	Standard operating procedures
SQ	Southern Queensland
SRG	Strategic Response Group
SRPA	Southern Rangelands Pastoral Alliance
STEM	Science, Technology, Engineering, Maths/Finance
TAS	Tasmania
TEF	True Essence Foods
UK	United Kingdom
UKMO	UK Met Office
UNFCCC	United Nations Framework Convention on Climate Change
UQ	The University of Queensland
USA	United States
USQ	University of Southern Queensland
VA	Vitamin A
VBM	Value based marketing
VIC	Victoria
VR	Virtual reality
WA	Western Australia
WALRC	Western Australian Livestock Research Council