

final report

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Feedlot education, training and technical services

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Executive summary

This project aimed to deliver information, education, training and technical services to improve management practices among cattle lot feeders throughout Australia.

Small to medium sized feedlot operators have found it increasingly difficult to keep abreast of continual improvements in management practices across such areas as animal welfare, Biosecurity, food safety and quality assurance. This poses a risk to individual feedlots and the broader cattle feedlot industry should a crisis unfold.

This project aims to provide on the ground extension support to such lot feeders thereby better leveraging R&D levy investments and reducing identified risk areas within individual feedlots and the industry as a whole.

To achieve these aims, a Feedlot Industry Technical Services Officer was appointed on a contract basis 3 days per week for the duration of the project.

Activities undertaken by the technical services officer included the completion of a feedlot risk assessment; the provision of technical assistance to feedlot operators; the continued development of close working relationships with the ALFA CEO, MLA R&D feedlot manager, ALFA and AUS-MEAT staff; and assistance in the 'on the ground' organisation and delivery of ALFA/ MLA events and training.

During the project, 350 feedlots were visited. Since the inception of the Technical Services Officer, three hundred and twenty-five individual feedlots have been visited, with 119 feedlots visited on more than one occasion. Of the 375 known NFAS Accredited feedlots 286, or 76% have now been visited at least once.

The Feedlot Industry Technical Services Officer position has been extremely well received by the feedlot industry. Feedback has been received from numerous feedlot operators on the value and worth of a Technical Services position and the important linkage such as position provides between feedlot operators and ALFA/MLA.

The project has been successful in meeting the stated project objectives. There is however, scope for a continuation of the on the ground extension support to lot feeders to further leverage R&D levy investments and further reducing risk areas within individual feedlots and the industry as a whole.

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1 Background

This project will deliver information, education, training and technical services to improve management practices among cattle lot feeders throughout Australia.

Small to medium sized feedlot operators have found it increasingly difficult to keep abreast of continual improvements in management practices across such areas as animal welfare, biosecurity, food safety and quality assurance. This poses a risk to individual feedlots and the broader cattle feedlot industry should a crisis unfold.

This project aims to provide on the ground extension support to such lot feeders thereby better leveraging R&D levy investments and reducing identified risk areas within individual feedlots and the industry as a whole.

2 Project objectives

The objectives of this project are as follows:

1. Improve lot feeder capacity to adopt research and development outcomes.
2. Develop training and communication material to aid in the delivery and adoption of technical and research & development advice and information.
3. In consultation with MLA and AUS-MEAT, initiate the delivery of specific technical services to the lot feeding industry.
4. Improve consultation and communication mechanisms on grain fed levy related matters to enhance future grain fed levy investments through MLA.
5. Improve lot feeder operational professionalism and performance over time to better manage and mitigate identified key risk areas within individual feedlots and the wider industry.

Additional objectives from contract variation September 2017-September 2018:

6. Devise a methodology and measure the adoption of technology by lot feeders.
7. Develop a Feedlot Industry database to improve feedlot profiling and information recording.
8. Drive NFAS and ALFA membership.

3 Methodology

The Feedlot Industry Technical Services Officer was appointed on a contract basis 3 days per week for the duration of the project. The activities that are to be completed by this role are as follows:

- Undertake a risk assessment of lot feeders and identify key areas where individual lot feeders and the wider feedlot industry need to improve. This assessment needs to record NFAS/ ALFA membership, prior lot feeder training, feedlot location, Katestone usage, shade, the provision of an onsite weather station and other factors;
- Identify the constraints that may be preventing improvement;
- Develop a work plan and strategy to target key areas, lot feeders and constraints. The plan and strategy needs to identify and rate the various options to improve such performances (e.g. feedlot visits, training, industry workshops etc), the most cost and time effective logistical arrangements to visit lot feeders in various areas, along with matrices that allows performance in these risk areas to be assessed over time;
- The provision of technical assistance to feedlot operators across various aspects of NFAS – quality assurance program management, vendor declarations (NVDs and CVDs), residue

management, biosecurity and heat load management, workplace health and safety, animal welfare and livestock handling;

- Maintain a close working relationship with the ALFA CEO and MLA Feedlot R&D Manager to provide an information conduit for future R&D, R&D outcomes and R&D feedback between lot feeders and ALFA/MLA over time;
- Work closely with ALFA and AUS-MEAT staff to assist in the communication and dissemination of advice for the practical implementation of NFAS and legislative requirements;
- Utilise and develop (where necessary) training and communication material that will enable interaction with lot feeders to be constructive, valuable and time effective;
- Assist in the 'on the ground' organisation and delivery of ALFA/MLA events and training;
- Develop a detailed list of activities undertaken and feedlots visited for submittal on a monthly basis;
- In conjunction with ALFA, MLA and AUS-MEAT staff, undertake an annual survey of lot feeders visited, to quantitatively determine whether such visits delivered benefits and value.

Additional activities that are to be completed from contract variation September 2017-September 2018:

- Develop an annual feedlot program extension and adoption plan in consultation with MLA and ALFA. Identify the top 10 R&D outputs/technologies produced out of the ALFA/MLA R&D Program each year and devise strategies and communication messaging for the effective communication, extension and adoption of those technologies;
- Take responsibility for rolling out a coordinated approach to communicating these technologies through a range of channels to maximise the chance of adoption including: one on one visits, phone calls, group gatherings, ALFA workshops and through agreed communication channels (i.e. Quarterly feed, ALFA eNewsletter, ALFA Journal, circulars);
- Devise a method for assessing the adoption of technology in consultation with MLA and ALFA. This would require a process of 'revisiting' and 'follow up' on operators previously communicated with and recording if adoption has taken place and/or having a standard way of asking and recording the adoption of specific R&D Program technologies when interaction takes place. The results are to be collated, analysed and reported quarterly;
- Develop and maintain a single comprehensive database profiling each feedlot. Expand on the current 'feedlot database', in consultation with ALFA and MLA, to better profile feedlots. This should include standardised information such as those items published in ALFA's feedlot directory, amongst other key information and personnel;
- The effective delivery of technical assistance to at least 130 feedlots throughout Australia each year;
- Actively drive NFAS and ALFA membership, with clear targets set in consultation with ALFA;
- Conduct bi-monthly meetings with ALFA/MLA to actively manage the position deliverables and the key adoption activities outlined above;
- Complete relevant reports as required in this agreement.

4 Results

The project has been well received by the feedlots visited and by those feedlot operators interacted with during industry workshops and activities. Positive feedback has been received from feedlot operators on their appreciation of a field-based position, the opportunity for information to be delivered at their own site and the advantage of an independent industry technical officer who they are able to discuss ideas or improvements for the feedlot. Over the length of the project, an average of 3 days per week have been worked. Key undertakings included:

4.1 Risk assessment and key areas for improvement.

Undertake a risk assessment of lot feeders and identify key areas where individual lot feeders and the wider feedlot industry needs to improve. This assessment needs to record NFAS/ ALFA membership, prior lot feeder training, feedlot location, Katestone usage, shade, the provision of an onsite weather station and other factors.

A risk assessment has been undertaken utilising the collated data from feedlot visits, ALFA and previous NFAS data. Unfortunately, issues were encountered with the provision of NFAS data from AUSMEAT. Due to privacy concerns, AUSMEAT have not been able to provide any further data. This includes information regarding audit outcomes and contact details for new NFAS accredited feedlots.

The assessment allocates risk based on feedlot size, participation in ALFA/MLA training and workshops, ALFA membership, ALFA Technical Services Officer Visit, the provision of shade in feedlot pens, and the usage of on-site weather stations and the Cattle Heat Load Toolbox.

With many of the smaller non NFAS Accredited feedlots, data not known for the last three factors so they are listed as 'Unknown'. From a risk perspective, 'Unknown' is treated the same as a "No" response. As feedlots have been visited, information is collected and added to the dataset.

The assessment of risk also takes into account weightings to each of the identified risk factors. The higher the value, the greater the level of perceived risk. The risk factors and weighting used in the risk assessment are as follows:

- Feedlot Capacity <50 +5
- Feedlot Capacity 50-999 +5
- Feedlot Capacity 1000-10,000 +10
- Feedlot Capacity >10,000 +5
- No ALFA/MLA Training attended +10
- Not an ALFA Member +10
- No ALFA Technical Services Officer Visit +10
- No Pen Shade +15
- No onsite Weather Station +10
- Do not use Cattle Heat Load Toolbox +15

A total of 513 feedlots were assessed, with an average risk score of 54.5 and a range of risk scores from 5 to 80. There were 85 feedlots with a risk score of 25 or less, 113 feedlots with a risk score between 26 and 50, 294 feedlots with a risk score between 51 and 75 and 21 feedlots with a risk score greater than 75.

An example of the output from the Risk Assessment is included in Appendix 7.1 (feedlot names and towns have been removed to protect the privacy of the operators). The risk assessment of feedlots remains an active process with information collected during feedlot visits being continually added to the risk assessment matrix. Likewise, feedlot participation in ALFA/MLA training and workshops is recorded, as are changes to ALFA membership and NFAS status.

A database of accurate feedlot GPS locations also continues to be collated, thereby providing ALFA with valuable information in the event of adverse weather or emergency situations.

4.2 Identify the constraints that may be preventing improvement.

There are a number of constraints that impact on the ability of feedlots, especially smaller feedlots, to implement new techniques and improve their performance. Time, isolation, labour and costs have all been identified by the technical services officer as potential constraints for feedlot operators.

A lack of time, especially the time needed to leave the feedlot in order to attend industry workshops or training courses, is often quoted by small feedlot operators as the reason they do not attend training. Likewise, the lack of suitable staff or the cost of hiring replacement staff to manage the feedlot in their absence is also quoted as a constraint for small feedlot operators attending training or workshops.

Likewise, time constraints are a challenge for all feedlot sizes. With smaller operations, where only a single labour unit is involved in the feedlot operation, the ability or desire to leave the operation to attend training, workshops or field days is very dependent on the proximity and timing of the activity. Many operators are not able to commit to any off-site activities while they have cattle on feed.

Other constraints identified include remoteness of the feedlot site, competition within the marketplace deterring interaction between feedlots, limitations in the quality or speed of internet connections and limitations in the ability/knowledge of some feedlot operators to use readily available and accepted technologies.

The Technical Services Officer has been able to overcome a number of these constraints through initial on-site visits. These visits have allowed a better understanding of the individual feedlot business so that information could be tailored to their individual requirements. The visits have built relationships with feedlot operators and enabled the establishment of the Technical Services Officer as an independent point of contact for future enquiries.

The visiting of a number of feedlots within a geographical area allows for the enhancement of local networks and discussions between feedlots. There are still opportunities for small group activities, allowing tailored workshops/training to be delivered in more locations, reducing travel time and time away from the feedlot for operators.

Overwhelmingly, feedlot operators have a positive long term outlook for the feedlot industry, despite tight market conditions being experienced presently. This positive outlook is manifest in the continued growth in feedlot capacity and numbers of cattle on feed observed during the duration of the project. During feedlot visits, the Technical Services Officer has observed considerable investment in infrastructure and/or machinery upgrades and the continual improvement of many feedlots.

4.3 Develop a work plan and strategy.

Develop a work plan and strategy to target key areas, lot feeders and constraints. The plan and strategy need to identify and rate the various options to improve such performances (e.g. feedlot visits, training, industry workshops etc), the most cost and time effective logistical arrangements to visit lot feeders in various areas, along with matrices that allows performance in these risk areas to be assessed over time.

A work plan and strategy to target key areas, lot feeders and constraints was developed and approved by ALFA and MLA.

Feedlot site visits have been selected from a combination of the risk assessment process and the visiting of sites in nearby geographical locations to maximise time and travel efficiencies. Locations visited have also been selected in conjunction with ALFA workshops or other activities to further reduce travelling costs.

Requests for assistance have also been received from a number of feedlots resulting in visits to particular areas. These visits again provide the opportunity to target nearby higher risk score feedlots and to assist in the collection of further data to be included in the risk assessment.

4.4 The provision of technical assistance to feedlot operators.

The provision of technical assistance to feedlot operators across various aspects of NFAS – quality assurance program management, vendor declarations (NVDs and CVDs), residue management, biosecurity and heat load management, workplace health and safety, animal welfare and livestock handling.

Technical assistance has been provided to feedlot operators through individual feedlot visits, the provision of responses to enquiries received and face to face contact at workshops and industry events.

Throughout the duration of the project, the Technical Services officer conducted three hundred and fifty feedlot visits. The feedlots visited were located in Queensland, New South Wales, Victoria, South Australia, Western Australia, Tasmania and New Zealand.

Since the inception of the Technical Services Officer, three hundred and twenty-five individual feedlots have been visited, with 119 feedlots visited on more than one occasion. Of the 375 known NFAS Accredited feedlots 286, or 76% have now been visited at least once.

Each feedlot visit involves considerable discussion with the feedlot operator on their individual operation and potential areas that ALFA or MLA can provide technical assistance or information to help improve their management practices.

Priority topics for discussion during feedlot visits have included the Antimicrobial Stewardship Guidelines, the Euthanasia Guidelines, implementing NFAS changes, pen surface management, animal welfare, biosecurity, food safety, NFAS auditing, quality assurance, market requirements, NLIS, animal traceability and the benefits of ALFA membership.

In addition to feedlot visits, two hundred and fifty-five enquiries for information have been received over the duration of the project. These enquiries have been received from feedlot operators, cattle

producers, processors, developers, consultants and supplier's/support industries to the feedlot industry.

Enquiries have been received in relation to implementing NFAS changes, NFAS and feedlot approval requirements, custom feeding, feedlot developments/expansions, feedlot R&D, EU accreditation, animal welfare, feedlot biosecurity, chemical residues, training, changes in the management of BJD and the JBAS system, LPA, record keeping, workplace health & safety.

Each of these enquiries have been responded to in a timely and effective manner with the relevant information or contacts provided.

4.5 Maintain a close working relationship with ALFA and MLA.

Maintain a close working relationship with the ALFA CEO and MLA Feedlot R&D Manager to provide an information conduit for future R&D, R&D outcomes and R&D feedback between lot feeders and ALFA/ MLA over time.

Weekly updates have been provided to the ALFA CEO and MLA Feedlot R&D Manager through a Monday morning communication of the contractor's intended movements and activities for the following week.

Bi-monthly ALFA/MLA Technical Services work plan and planning teleconferences have been conducted to review, plan and coordinate the preparation and delivery of information and resources to feedlot operators. These meeting provide a regular conduit for the transfer of information between MLA, ALFA and the Technical Services Officer.

Regular face to face contact is maintained through attendance and participation at all ALFA Council meetings and industry workshops/meetings.

The contractor has attended and participated in each of the twice yearly Veterinarians and Nutritionists meetings, Heat Load Forecasting Review teleconferences and FTAG quarterly planning teleconferences. The contractor provides input to these meetings from the interaction with lot feeders during feedlot visits and the enquiries received.

4.6 Communication and dissemination of advice.

Work closely with ALFA and AUS-MEAT staff to assist in the communication and dissemination of advice for the practical implementation of NFAS and legislative requirements.

During the project the contractor played an important role in the communication and implementation of the new November 2017 NFAS Rules and Standards of Accreditation.

This involved the participation in a number of teleconferences with ALFA, AUS-MEAT and Currie Communications regarding planning and communication for the upcoming changes.

A final review of the NFAS Rules and Standards was completed, as well as the review and updating of the NFAS Rules and Standards Changes Summary document. This document provided a constant reference for the roll out of the communication strategy regarding these changes and was distributed to all NFAS accredited feedlots.

A “Changes to NFAS Rules and Standards” power point presentation was developed and then presented by the contactor at the 2017 ALFA/MLA QA/NFAS/Heat Load workshops in Emerald, Dalby, Tamworth, Moama, Wagga Wagga and Murray Bridge and at the WALFA/Irongate Wagyu Field Day, Albany WA.

Over 170 feedlot operators attended these workshops and numerous questions and clarifications regarding the changes and NFAS in general were able to be answered.

The coordinated and planned communication of the new NFAS Rules and Standards resulted in a very smooth and successful implementation of the changes.

4.7 Utilise and develop training and communication material.

Utilise and develop (where necessary) training and communication material that will enable interaction with lot feeders to be constructive, valuable and time effective.

There is a large volume of training and communication material available to the feedlot industry. An extensive library of material, in both hardcover and electronic formats, has been collated and utilised for dissemination to lot feeders. This library of material includes but is not limited to the following:

- National Guidelines for Beef Cattle Feedlots in Australia, 2012
- National Beef Cattle Feedlot Environmental Code of Practice, 2012
- MLA Feedlot Technical Library DVD which includes a compilation of publications, reports and videos relevant to the Australian feedlot industry produced between 1992 and 2012
- ALFA/MLA Animal Health & Welfare workshop Jul/Aug 2013 presentations
- ALFA/MLA Milling & Nutrition workshop 2014 presentations
- ALFA/MLA Caring for cattle – feedlots. A guide for pen riders and stock handlers 2011
- ALFA/MLA Feedlot Backgrounding and Induction DVD 2014
- National Biosecurity Manual for Beef Cattle Feedlots September 2013
- MLA tips & tools - Heat load in feedlot cattle
- ALFA/MLA Managing Summer Heat Workbook 2014
- ALFA/MLA Panting Score Reference Chart
- MLA/Australian Business Training Solutions Work Health and Safety Management System Upgrade 2005-2014 Workshop manual and resources
- MLA Beef cattle feedlots: waste management and utilisation manual 2015
- MLA Beef cattle feedlots: design and construction manual 2016
- MLA Evaluation of practices used to reduce the incidence of bovine respiratory disease in Australian feedlots 2016
- MLA Euthanasia of feedlot cattle guidelines 2016
- MLA Best practice grain processing manual for Australian feedlot cattle, 2018
- ALFA/MLA Antimicrobial stewardship guidelines for the Australian cattle feedlot industry

Electronic versions of these documents and resources, when available, allow for efficient and time effective dissemination of information to lot feeders, both during site visits and when following up enquiries from lot feeders away from the site.

Unfortunately, many feedlots are unaware of the extensive resources available to them. While conducting site visits, discussions often focus on recent ALFA/MLA workshops and training activities. These discussions, accompanied by questioning of the feedlot operator regarding their own

operation, allow for the dissemination of relevant and timely information to the feedlot operator. Where available, physical copies of documents are provided, while electronic versions and links to suitable material are provided post visits when required.

Articles have been prepared and published in the ALFA Lotfeeding journal:

- September 2015 - Pregnancy and Calving Management – an Animal Welfare priority
- December 2015 - Training and Developing Staff – investing in the future
- February 2016 - Feedlot profitability – a time for reflection
- April 2016 - Nutrition and Milling
- June 2016 - Pen Cleaning and Surface Management, Preparing for Winter
- August 2016 - Mouse numbers on the rise
- October 2016 - The safe use of recycled fats and oils in feedlot rations
- December 2016 - Pen cleaning – preparing for the summer ahead
- February 2017 - Livestock traceability
- April 2017 - Dark Cutting Beef
- June 2017 - Animal Welfare Auditing – a key priority for the feedlot industry
- July 2017 - Bovine Johne’s Disease – the basics
- July 2017 - Woolworths Supplier Excellence Program Reporting
- September 2017 - Minimising residues in beef
- November 2017 - Fats and Oils in feedlot rations
- January 2018 - Training and developing staff
- March 2018 - Emphasis on Animal Welfare continues
- May 2018 - Pen cleaning and surface management, preparing for winter
- July 2018 - Pregnancy and calving management
- September 2018 - Market Specifications – Ensuring you know your customer’s requirements

The contractor has also contributed to the development of guidance material relating to the introduction and implementation of the new NFAS Rules & Standards November 2017. The material assisted lot feeders implement the changes more effectively and efficiently.

4.8 Assist in the organisation and delivery of ALFA/MLA events and training.

The contractor has provided substantial assistance to many of the ALFA events and training during the project period.

The contractor assisted with the planning and delivery of both the 2016 and 2018 ALFA Nutrition and Milling workshops.

In 2016 workshops were held at Murray Bridge (SA), Moama (NSW), Wagga Wagga (NSW), Tamworth (NSW), Toowoomba (QLD) and Emerald (QLD), with the contractor assisting with the on the ground organisation and chairing the majority of the workshops. The workshops were attended by over 150 people.

In 2018 the contractor successfully coordinated the organisation and delivery of workshops held in Emerald (QLD), Toowoomba (QLD), Tamworth (NSW), Wagga Wagga (NSW), Moama (NSW), Hahndorf (SA) and Corrigin (WA) with over 215 participants attending. The workshops were the culmination of a large amount of planning and preparation. The contractor organised registrations, confirmed venues, finalised the program, developed workshop flyers and coordinated the logistics, including accommodation, flights and hire cars.

The contractor also presented on ALFA initiatives, including the Antimicrobial Stewardship Program, with positive feedback being received on the entire workshop series.

During the project the contractor assisted in the delivery of the 2016 and 2018 ALFA Animal Welfare Officer training workshops.

In 2016 the one and a half day workshops were conducted at:

- Iranda Feedlot (SA)
- Jondaryan and Kerwee Feedlot (QLD)
- Teys Condamine Feedlot (QLD)
- Killara Feedlot (NSW)
- Wagga Wagga and Teys Jindalee Feedlot (NSW)
- Moama and Associated Feedlot (NSW)
- Karlgarin and Pederah Creek Feedlot (WA)

The training was delivered by Dr Tony Batterham, Dr Paul Cusack and the contractor was very well received, with the practical nature of the feedlot visits a real highlight for the participants. Overall, 114 feedlot and associated staff were trained to be Animal Welfare Officers.

In 2018, the contractor delivered, in conjunction with Dr Paul Cusack, the ALFA Animal Welfare Officer Training to a total of 123 participants. The workshops were conducted at:

- Karlgarin and Pederah Creek Feedlot (WA)
- Killara Feedlot (NSW)
- Condamine and Teys Condamine Feedlot (QLD)
- Oakey and Kerwee Feedlot (QLD)
- Temora and Teys Jindalee Feedlot (NSW)
- Geelong and Jalna Feedlot (VIC)
- Princess Royal Feedlot (SA)

While assisting with both Animal Welfare Officer training workshops, the contractor also represented the RTO, TAFE South West Queensland, as the qualified trainer. This involved explaining the assessment requirements for the Animal Welfare Officers Skill Set, consisting of the 2 units of competency, and ensuring all the requirements for assessment were completed adequately.

After the workshop, the contractor was responsible for collating post course assignments from the participants, ensuring the assignments adequately fulfilled the requirements for the assessment, providing feedback to the participants and forwarding all of the necessary completed documentation to the RTO.

Of the 114 participants in 2016, 105 successfully completed the requirements of the training and were awarded The Animal Welfare Officer skill set. While in 2018 the process is ongoing, however all participants were very positive and indicated they intended to complete the assessment process.

As mentioned previously, the contractor assisted with and presented at the 2017 ALFA/MLA QA/NFAS/Heat Load workshops held in Emerald (QLD), Dalby (QLD), Tamworth (NSW), Moama (NSW), Wagga Wagga (NSW) and Murray Bridge (SA).

The contractor attended and assisted with the 2017 ALFA SmartBeef Conference held in Armidale and attended by 350 delegates.

4.9 Monthly reporting of activities.

Develop a detailed list of activities undertaken and feedlots visited for submittal on a monthly basis.

Monthly reports have been provided to the ALFA CEO and MLA Feedlot R&D Manager outlining activities undertaken and feedlots visited each month. These monthly reports also provide feedback to ALFA and MLA.

4.10 Undertake an annual survey of lot feeders visited.

In conjunction with ALFA, MLA and AUS-MEAT staff, undertake an annual survey of lot feeders visited, to quantitatively determine whether such visits delivered benefits and value.

An annual survey of feedlots was unable to be completed for this project, due in part to the large number of surveys feedlot were already being asked to complete and the unfortunately low response rates that had been achieved by other surveys.

Another method for quantifying the delivered benefits and value of the project and the Technical Services Officer roles is under development however no results have been able to be determined at this stage.

Feedback to the contractor has continued to be very positive from feedlots visited and feedlot operators interacted with through enquiries and ALFA workshops.

Since December 2017, the contractor has conducted the ALFA/MLA Quarterly Feedlot survey. This requires the contractor to develop and deploy the survey, monitor survey responses, collate/check data, follow up with feedlots to ensure sufficient responses have been received, analyse data, liaise with MLA and prepare data for the ALFA and MLA press releases.

4.11 Develop an annual feedlot program extension and adoption plan.

Develop an annual feedlot program extension and adoption plan in consultation with MLA and ALFA. Identify the top 10 R&D outputs/technologies produced out of the ALFA/MLA R&D Program each year and devise strategies and communication messaging for the effective communication, extension and adoption of those technologies.

An annual feedlot program extension and adoption plan was developed in consultation with MLA and ALFA. The major focus of the plan was individual feedlot visits and endeavouring to meet information and/or technology requirements of those feedlots visited.

Due to delays encountered with the finalisation of a number of ALFA/MLA R&D projects, combined with some projects not producing the desired outputs or technologies, it was not possible to identify the top 10 R&D outputs/technologies for the year.

The focus of the contractor's extension plan was therefore the communication and implementation of the November 2017 NFAS Rules and Standards of Accreditation; communication and implementation of the ALFA/MLA Antimicrobial stewardship guidelines for the Australian cattle

feedlot industry; dissemination of available technical resources; and the delivery of workshop material to lot feeders.

4.12 Utilise various channels to maximise adoption of outputs and technologies.

Take responsibility for rolling out a coordinated approach to communicating these technologies through a range of channels to maximise the chance of adoption including: one on one visits, phone calls, group gatherings, ALFA workshops and through agreed communication channels (i.e. Quarterly feed, ALFA eNewsletter, ALFA Journal, circulars).

The contractor utilised a number of channels to maximise the adoption of the outputs and technologies. During the twelve-month period the contractor conducted ninety-one individual feedlot visits, responded to 93 telephone/email enquiries, prepared six ALFA Journal articles and a number of ALFA eNewsletter articles.

Presentations outlining ALFA/MLA Initiatives were developed and delivered at three workshop series to over 500 attendees. These presentations outlined the requirements for the NFAS Rules & Standards implementation and the introduction of the ALFA/MLA Antimicrobial stewardship guidelines for the Australian cattle feedlot industry.

4.13 Devise a method for assessing the adoption of technology.

Devise a method for assessing the adoption of technology in consultation with MLA and ALFA. This would require a process of 'revisiting' and 'follow up' on operators previously communicated with and recording if adoption has taken place and/or having a standard way of asking and recording the adoption of specific R&D Program technologies when interaction takes place. The results are to be collated, analysed and reported quarterly.

Methods for assessing the adoption of technology by the feedlot industry have been discussed and potentially proposed however no method has been implemented at this stage.

Due to the difficulty in identifying discreet technologies that could be adopted by feedlots, it was not possible to devise a method for following up feedlots. Feedback was obtained from AUS-MEAT regarding the implementation of the new NFAS Rules & Standards. Post implementation NFAS audits indicated that the changes had been readily adopted by feedlot operators and the communication and implementation of the changes had been very successful.

Likewise, information collected at NFAS audit also indicated that a high percentage of feedlots were aware of the ALFA/MLA Antimicrobial stewardship guidelines for the Australian cattle feedlot industry, however very few had implemented any changes to their feedlot business. The emphasis of the Antimicrobial stewardship extension will need to develop from that of awareness to implementation.

4.14 Develop and maintain a single comprehensive database profiling each feedlot.

Develop and maintain a single comprehensive database profiling each feedlot. Expand on the current 'feedlot database', in consultation with ALFA and MLA, to better profile feedlots. This should include standardised information such as those items published in ALFA's feedlot directory, amongst other key information and personnel.

Work has commenced on the development of a single feedlot database; however, this has not yet been fully integrated.

The contractor has compiled a detailed database of information collated from earlier NFAS data, ALFA membership details and from information gathered during on site feedlot visits.

The database consists of feedlot contact details, addresses, accurate GPS coordinates, NFAS accreditation status, ALFA membership, records of visits to the feedlot by the contractor, the feedlots' use of consultant vets or nutritionists, the presence of on-site weather stations, provision of shade or registration for the Cattle Heat Load Toolbox. Records of training attended by feedlot operators or staff are maintained as well.

Recently a record of ALFA/MLA technical resources provided to the feedlot is also being maintained.

Details regarding cattle purchasing requirements, as have been included in ALFA's feedlot directory previously are yet to be collected.

The database will continue to be updated as more feedlots are visited and feedlots continue to participate in training and workshops delivered by ALFA.

4.15 Delivery of technical assistance to at least 130 feedlots each year.

During the twelve-month period the contractor conducted ninety-one individual feedlot visits.

Each feedlot visit involves considerable discussion with the feedlot operator on their individual operation and potential areas that ALFA or MLA can provide technical assistance or information to help improve their management practices.

Priority topics for discussion during feedlot visits have included the Antimicrobial Stewardship Guidelines, the Euthanasia Guidelines, implementing NFAS changes, pen surface management, animal welfare, biosecurity, food safety, NFAS auditing, quality assurance, market requirements, NLIS, animal traceability and the benefits of ALFA membership.

In addition to feedlot visits, the contractor has responded to 93 telephone/email enquiries during the twelve months. Many of these are technical in nature and have included enquiries in relation to implementing NFAS changes, NFAS and feedlot approval requirements, custom feeding, feedlot developments/expansions, feedlot R&D, EU accreditation, animal welfare, feedlot biosecurity, chemical residues, training, changes in the management of BJD and the JBAS system, LPA, record keeping, workplace health & safety.

Technical information and assistance have been provided to well over 130 feedlots through these two avenues. Additionally, technical assistance has been provided through the provision of the Animal Welfare Officer training to 123 feedlot staff.

4.16 Actively drive NFAS and ALFA membership.

Actively drive NFAS and ALFA membership, with clear targets set in consultation with ALFA.

The contractor has actively promoted the benefits of both ALFA membership and NFAS accreditation to both existing and proposed feedlot operators. A comprehensive range of materials have been collated by the contractor to reinforce the benefits of both NFAS and ALFA membership. These resources are utilised during face to face feedlot visits, predominantly regarding ALFA membership as the vast majority of feedlots visited are NFAS accredited, and for telephone/email enquiries from potential feedlot operators.

4.17 Conduct bi-monthly meetings with ALFA/MLA.

Conduct bi-monthly meetings with ALFA/MLA to actively manage the position deliverables and the key adoption activities outlined above.

Bi-monthly meetings have been conducted between the contractor, MLA and ALFA. These meetings have allowed for regular updates on the objectives, priorities and outcomes of the Technical Services Officer position.

5 Discussion

5.1 Improve lot feeder capacity to adopt research and development outcomes.

Lot feeder capacity to adopt appropriate research and development outcomes have been improved through the relationships developed by the contractor and individual feedlot operators.

A proportion of feedlot operators do not participate in industry workshops, training or communication channels that provide network opportunities or linkages to the latest research and development outcomes.

The Technical Services role has been able to establish relationships with feedlot operators through three hundred and fifty on site feedlot visits while also developing close working relationships with ALFA, MLA, AUS-MEAT and Katestone.

5.2 Develop training and communication.

Develop training and communication material to aid in the delivery and adoption of technical and research & development advice and information.

Training and communication material has been developed to aid in the delivery and adoption of technical and research and development advice and information. An extensive library of resources was already in existence that has been collected and actively disseminated to lot feeders.

Assistance has been provided in the development of materials for, and the delivery of the accredited ALFA Animal Welfare Officer Training, ALFA Nutrition and Milling workshops, ALFA/MLA QA/NFAS/Heat Load workshops and the ALFA SmartBeef Conference.

Twenty articles have also been prepared and published in the ALFA Lotfeeding journal.

5.3 Initiate the delivery of specific technical services to the lot feeding industry.

In consultation with MLA and AUS-MEAT, the delivery of specific technical services to the lot feeding industry has occurred. Technical assistance has been provided to feedlot operators across various aspects of NFAS including quality assurance program management, vendor declarations, residue management, biosecurity, heat load management programs, workplace health and safety systems, animal welfare and livestock handling.

Assistance with the successful implementation of the new NFAS Rules and Standards of Accreditation has been a highlight of this consultative relationship.

5.4 Improve consultation and communication on grain fed levy related matters.

Improve consultation and communication mechanisms on grain fed levy related matters to enhance future grain fed levy investments through MLA.

Consultation and communication mechanisms on grain fed levy related matters have been improved through the development and maintenance of a close working relationships between the contractor and the ALFA CEO and MLA Feedlot R&D Manager.

These relationships have provided an information conduit for future R&D, R&D outcomes and R&D feedback between lot feeders and ALFA/MLA. Information has been reported on a regular basis to both ALFA and MLA.

The continued promotion to lot feeders of the advantages of participation in NFAS and membership of ALFA and MLA has actively occurred during site visits, workshops and industry activities. Likewise the endorsement of ALFA and MLA for their support of workshops and training activities has occurred.

5.5 Improve lot feeder operational professionalism and performance.

Improve lot feeder operational professionalism and performance over time to better manage and mitigate identified key risk areas within individual feedlots and the wider industry.

Lot feeder operational professionalism and performance to better manage and mitigate identified key risk areas within both individual feedlots and the wider industry has started to be improved

through the development of a risk assessment matrix for feedlots that allows targeting of key areas for improvement.

Data collected includes NFAS accreditation status, ALFA membership, participation in industry workshops or training, feedlot location, Cattle Heat Load toolbox usage, the provision of shade and the use onsite weather stations.

Not all data fields are available on all feedlots, thereby risk based targeting of on-site visits and continued collection of data is paramount.

5.6 Devise a methodology and measure the adoption of technology by lot feeders.

Methods for assessing the adoption of technology by the feedlot industry have been discussed and potentially proposed however no method has been implemented at this stage. As more specific R&D Program technologies become available, methods for measuring their adoption by lot feeders will be developed.

5.7 Develop a Feedlot Industry database.

Develop a Feedlot Industry database to improve feedlot profiling and information recording.

An extensive feedlot industry database has been collated and maintained throughout the project. Privacy concerns have limited the amount of information able to be sourced by the contractor from AUS-MEAT and Katestone. The most reliable sources of data remain individual feedlot visits and the participation of feedlot operators and staff in ALFA workshops and training activities.

5.8 Drive NFAS and ALFA membership.

NFAS and ALFA membership is actively promoted by the contractor with the benefits of both being outlined to both existing and proposed feedlot operators.

6 Conclusions/Recommendations

The project has been successful in meeting the stated project objectives. There is however scope for a continuation of the on the ground extension support to lot feeders to further leverage R&D levy investments and further reducing identified risk areas within individual feedlots and the industry as a whole.

During the project, 350 feedlots were visited. Since the inception of the Technical Services Officer, three hundred and twenty-five individual feedlots have been visited, with 119 feedlots visited on more than one occasion. Of the 375 known NFAS Accredited feedlots 286, or 76% have now been visited at least once.

Ongoing extension support is required to service the majority of the remaining 24% of NFAS accredited feedlots and to endeavour to encourage a greater number of non-accredited feedlots to adopt the NFAS quality assurance scheme.

7 Appendix

7.1 Example of Risk Assessment

Feedlot Name	Town	Risk Score	NFAS Accred	Cap. <50	Cap. 50-999	Cap. 1000 - 10,000	Cap. >10,000	ALFA/MLA Training w/shops	ALFA Member	ALFA TSO Visit	Pen Shade	Weather Station	Heat Load Toolbox
#####	#####	80	N			YES		NO	NO	NO	UNKNOWN	UNKNOWN	UNKNOWN
#####	#####	75	S	YES				NO	NO	NO	UNKNOWN	UNKNOWN	UNKNOWN
#####	#####	25	A			YES		YES	YES	YES	NO	YES	YES
#####	#####	20	A			YES		NO	YES	YES	YES	YES	YES
#####	#####	75	A		YES			NO	NO	NO	UNKNOWN	UNKNOWN	UNKNOWN
#####	#####	65	A		YES			NO	NO	YES	NO	NO	NO
#####	#####	80	A			YES		NO	NO	NO	UNKNOWN	UNKNOWN	UNKNOWN
#####	#####	75	A		YES			NO	NO	NO	UNKNOWN	UNKNOWN	UNKNOWN
#####	#####	70	A			YES		NO	NO	YES	NO	UNKNOWN	UNKNOWN
#####	#####	70	S			YES		NO	NO	YES	NO	NO	UNKNOWN
#####	#####	65	A	YES				NO	NO	YES	NO	NO	NO
#####	#####	5	A				YES	YES	YES	YES	YES	YES	YES
#####	#####	65	A		YES			NO	NO	YES	NO	NO	UNKNOWN
#####	#####	25	A			YES		YES	YES	YES	YES	YES	NO
#####	#####	55	A		YES			NO	YES	YES	NO	NO	NO
#####	#####	25	A			YES		YES	YES	YES	NO	YES	YES
#####	#####	75	A	YES				NO	NO	NO	UNKNOWN	UNKNOWN	UNKNOWN