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Australian beef language...
conception to consumption

Livestock language

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Meals language

AUSTRALIAN BEEF LANGUAGE 'WHITE PAPER'

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Prepared by the Beef Language White Paper Consortium

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ABSTRACT

The Australian Beef Language White Paper has been developed to provide an independent, evidence-based assessment of the future requirements of the Australian beef language looking towards a thirty year horizon.

Recognising that value chain languages in all industries must continually evolve to accommodate changing needs, the paper examines the implications for the current beef language of changes in consumer demands, market access requirements, new processing and description technologies, breeding and on-farm management, while seeking to provide a balance between scientific knowledge and commercial reality.

Recommendations have been grouped under seven themes and focus on progressive modifications and additions to the language. Critically, they do not preclude the ability to trade under current descriptions, but allow new opportunities to be embraced for those who wish to pursue them:-

1. **From Carcase to a Whole-of-Chain Language**
2. **Transition to an Outcomes Based Language**
3. **On-going Development of Industry Standards**
4. **Alignment of Live Animal & Carcase Languages**
5. **Objective Measurement & System Integrity**
6. **Data Capture for Seamless Information Flow and**
7. **Global Beef Descriptions.**

The White Paper has been written by an independent group appointed by an industry steering committee. It has been developed through a rigorous and extensive process of research and industry consultation that included the development of thirteen technical papers and an industry consultation paper. These papers appear in the Appendix in addition to a paper summarising the outcomes of 49 one-on-one consultations held with individuals and groups from various industry sectors. It is highly recommended that those seeking a more detailed understanding of the issues raised by the White Paper refer to these documents.

Above all, it should be recognised that the White Paper was commissioned by industry to help inform its strategic decision making and that the carriage of any recommendations made in the paper, and their associated timeframes, remains in industry hands.

BACKGROUND

In 2014 Meat & Livestock Australia (MLA) and the Australian Meat Processor Corporation (AMPC), as directed by the Cattle Council of Australia (CCA), Australian Lot Feeders Association (ALFA) and Australian Meat Industry Council (AMIC) commissioned a 'White Paper' on the future of the Australian beef language. No formal review of the language had been undertaken since AUS-MEAT was formed in 1980.

The development of this White Paper has involved:

▸ A thorough and extensive review of the scientific and grey[1] literature relating to all elements of the beef language and preparation of a series of detailed papers on a range of relevant topics. These papers were available for review.

▸ An open call to any interested parties to make submissions to the review on matters of relevance to the White Paper.

▸ The preparation of a Working Consultation Paper which presented an overview of the key findings of the literature review and open call and posed a series of questions.

▸ Detailed consultations with a broad cross-section of key industry participants (over 50), including companies and organisations involved in food service, retail, wholesale, export, manufacturing, processing, livestock production, education, policy and regulation. The outcome from these industry consultations is provided in a separate paper.

▸ Development of this White Paper.

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1   The term grey literature refers to research that is either unpublished or has been published in non-commercial form. Examples of grey literature include government reports, policy statements and issues papers, conference proceedings etc (as defined by University of New England – https://www.une.edu.au/library/support/)

KEY PRINCIPLES

This White Paper is underpinned by several key principles:

▸ The consumer is a critical point in the value chain and central to the purpose of any beef language. A modern beef language should empower the ultimate consumer by relaying critical descriptors which will assist them to make a value judgement about the beef meal being purchased. These descriptors will in the main be conveyed by processor, wholesaler or retailer brands.

▸ A fully collaborative value chain linked to the latest technology can and should reward efforts to increase the value of the product at each stage of the chain. Language should support value chain initiatives and encourage the building of brands and brand value.

▸ As part of the ongoing process of change, progressive modifications and additions to the existing language that accommodate new opportunities for beef should not preclude trading under current descriptions.

▸ Not all recommendations are pertinent now as some are not immediately practical or implementable; they will take place over short, medium and long-term time frames. The degree and rate of adoption will vary in accordance with individual business needs and circumstances.

▸ Improved technology will deliver increased accuracy, automation and objective measurements for many beef language traits. These measurements will replace current subjective appraisal when their cost and accuracy meets industry needs.

▸ Wherever possible the language should become far more integrated (from paddock to consumer and back again), should be simplified and should allow the supply of information (electronic) up and down the value chain. This requires common terminology to be used in live animal and carcase description to facilitate clear communication.

▸ The language needs to facilitate trade, add value along the value chain, and underpin a fair and equitable trading platform for all participants.

▸ The language structure should aim for equivalence with global standards and be made available for utilisation within a global beef language. There is currently a considerable effort within the United Nations to develop global standards for meat description. Australia would benefit from actively participating in and influencing the evolution of these standards.

▸ Additional regulation should be avoided except where absolutely necessary.
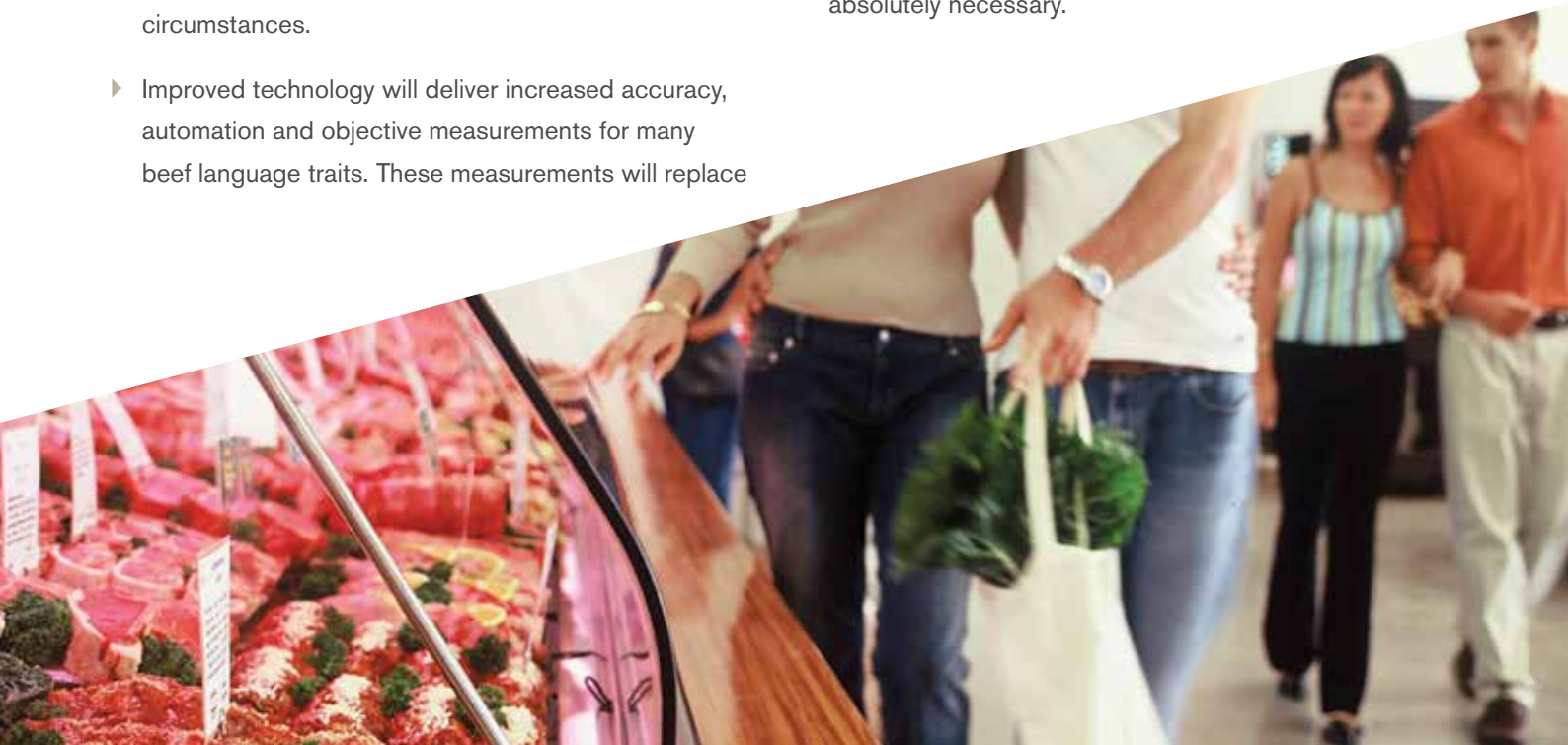
INTRODUCTION

In the 1980's the industry took steps to formally describe beef products with the introduction of the AUS-MEAT language and the Handbook of Australian Meat (HAM). The language used objective measures drawn from industry best practice to classify beef carcases with dentition and sex as the base. This established a global trading platform used extensively within the processing and wholesale sectors of the beef industry.

In the 1990's, driven by a Meat Industry Strategic Plan (MISP) which identified 'guaranteeing the eating quality of beef and lamb' as one of its six imperatives, the industry took a strategic decision to focus more on the consumer. It brought together consumer, market and scientific research to lay out the basis for a voluntary 'national product quality description scheme'. The key requirements were that it 'must be consumer driven, involve standards that could not be compromised, be simple to communicate and be continually monitored and improved to ensure accurate application of standards against consumer sensory responses'.

The advent of this new and voluntary approach, which was based on the merging of meat science principles and consumer sensory behaviour, provided a further opportunity for the industry to extend the meat language, in this case to include objective descriptions of beef meal outcomes derived from an interactive prediction model.

Through use of this technology, Meat Standards Australia (MSA) has underpinned an expansion of company brands by providing a means to position brand attributes based on differentiated outcomes for the consumer. This has opened up many avenues for innovation throughout the value chain. It has also provided a strong and consistent basis on which to build brand value and on-farm premiums for cattle identified as delivering required quality outcomes.

Further brand differentiation has developed around the use of 'raising claims' and provenance stories. Pasture fed, organic, grainfed, natural, hormone free, breed based (for example Wagyu, Angus, Hereford, Shorthorn) along with regional descriptions all appear in domestic and international marketplaces.

In addition, new products based around muscle seaming and targeted at specific cooking styles are becoming commonplace allowing further brand and product differentiation. More sophisticated value adding through commercial processes including ready-to-eat (RTE) meal offers is also occurring.

While branding is developing as the industry responds to changing consumer requirements, the speed of smartphone technology change and its effect on consumer behaviour – through access anywhere, anytime, to multiple retail channels, product information, personalised offers and social media – is placing an urgent need on the industry to provide consumers with credible product information from any point in the value chain.

Research shows that, while price is an important element in a consumer's purchasing decision, other attributes play a significant part in a consumer's judgement of value when purchasing beef products.

Beef language can play a role in this process by making available both eating quality and provenance information in a more streamlined way with flow-on benefits in simplified carcase sorting, boning and packaging to support branded product offers for different market segments.

Further, the beef language can assist in providing a flow of information up and down the value chain – from consumer to conception to consumer – carrying market and other signals of benefit to each sector of the value chain.

In light of the above and further extensive research undertaken as part of this review, the beef language has been assessed against two key criteria: 1) it must meet the trading needs of each segment of the value chain and 2) enable a seamless connection for data transfer between sectors to provide an accurate and concise product description to the final consumer.

As the sole source of all industry revenue ultimately comes from what the consumer is prepared to pay, the consumer is a critical part of the language chain.

For the purposes of the review, the language was viewed within three sections:

▸ That relating to the live animal;

▸ That relating to carcases and cuts through the processing and distribution chain; and

▸ That describing product to the ultimate consumer via retail or food service product.

In current markets the linkages between these sectors is considered critical as consumers increasingly demand information relating to the production system and provenance. If breed, feeding system, environmental or welfare assurances are desired then the information supporting a retail label or restaurant menu must be seamlessly relayed from farm to consumer and back again to deliver important messages regarding value together with information that benchmarks performance and provides a base for improvement.

The existing beef language has served the industry well over a 30-year period and remains the basis for domestic and export trade in beef. The language referred to however is restricted to carcases and cuts. The associated livestock

and meal description language components are far less standardised or understood and currently are not well linked to the existing language. This is a serious industry weakness in meeting future market environments.

While over 300 amendments have been made to the beef language since its inception it is important that this ability to change continues. The White Paper process seeks to impartially address ongoing industry developments and to identify further language changes needed to help position the industry for success over the next 30+ years.

In particular, structural changes within the industry have now created challenges to the base structure of a carcase-based beef language and warrant consideration as the language adapts to current needs and future opportunities. These changes include:

▸ The decline in beef sold within the trade in whole carcase form.

▸ The development and widespread adoption of MSA.

▸ The increasing use and sophistication of company brands.

▸ Exponential change in information technology and data interchange.

▸ Increasing competition from other high value protein sources.

Each of these factors places greater focus on language descriptions that detail the 'outcome' of the beef meal rather than the physical attributes of the beef product – for example, premium 'casserole or slow cook' beef as opposed to 'chuck steak, or Brand A++ steak versus YP striploin. This is reinforced by scientific studies showing that the aligning of a consumer's expectation with their actual experience is important to their perception of value and the likelihood of repeat purchasing.

It is recognised that the speed of transition will vary among trading participants. While the use of existing language can continue, alternative outcome-based descriptions must be available for use in the short term.

This Paper puts forward independent evidence-based options for future development of the language. It will be for industry to decide how to respond to those options.

A VISION FOR 2040

By 2040 the 'landscape' of beef products is significantly different to what it was in 2015, reflecting the impact of transformational technologies throughout the value chain which have changed the structure and focus of the Australian beef industry. The industry is now capturing optimum value from every carcase as it pursues product and branding strategies for differentiated markets both domestically and globally.

At the ***consumer interface***, for Generation Alpha, the kindergarten children of 2015, and their fellow cohorts Gen Y and Z, technology has changed the way they shop, how they eat and where they buy. Empowered by the increasing connectivity of their digital world they can shop anywhere, anytime with instant access to multiple retail channels, product information, personalised product offers and social media. They are in an unprecedented position of power and the products they buy increasingly reflect their lifestyle choices and social values. The 'value' of a product includes its provenance and 'stories', convenience, healthiness and 'authenticity'. Consumers expect seamless information from product origin to final brand supplied by highly transparent value chains. Any measures to interrupt this flow are met by a viral communications backlash.

Beef, both fresh and in cooked form, is bought in ways which reflect busy lifestyles and a liking for new cuisines and flavours. The uptake of technologies and interventions throughout the value chain, will drive branded beef 'meal' portions that offer quality outcomes for different cooking styles. These have superseded cut-based products which required considerable cooking knowledge with no guaranteed outcome. Consumers of 2040 buy beef confident that their expectations will be realised.

Food service and restaurants, supported by improved cooking technology and pre-prepared products, offer new meal experiences in different formats to fit all-day eating requirements, continually innovating with flavours and ingredients. Their supply chain credentials have come under increasing scrutiny as consumers have demanded information on food sourcing and production systems. Branded beef products are increasingly sought by all sectors to fill this need along with industry certification programmes which guarantee the veracity of raising claims made. As shoppers in a global digitalised world, consumers increasingly look for standardised and globally recognised product descriptions, this role being filled by increasing use of an international beef language.

At the ***importer/wholesaler supply interface***, the growth in semi-prepared and pre-cooked products has moved traditional wholesale practices away from price-based commodity trading of product of uncertain consumer quality – as described by historical systems related to primal cuts and animal age, dentition and sex – towards product of known quality for its end use.

For ***raw meat processors***, technology changes in processing and packaging of ready-to-eat (RTE) products have delivered highly consistent retail products developed using a consumer-based system that accurately estimates the interaction of raw materials and the subsequent processing steps in determining final product performance.

Within the boning room, product description pathways based on cooking and eating quality outcomes have helped reduce operational complexity as the attribute inputs required by language are vastly simpler, reducing carcase sorting prior to boning. Use of tighter eating quality portion/weight bands has resulted in greater fabrication of individual muscles and new trimming

specifications. Greater automation will improve the ability to fabricate beef portions to specification.

Technology has dramatically changed the way required language traits are measured and how carcases are valued. This has changed boning room infrastructure and processes as the point of ownership transfer has moved from over-the hooks (OTH) trading to payments based on the true value of each carcase for targeted markets.

At the slaughter-floor to boning room interface and chiller assessment – as carcases pass from the slaughter floor they are accompanied by substantial electronic data relating to their composition, individual cut yields and the eating quality potential of individual muscle portions.

These changes have been underpinned by ongoing trial and development of new technologies which provide accurate objective measurements of key inputs.

At the live animal to slaughter-floor interface new slaughter-floor measures include animal stress indicators, muscle and carcase yield estimates and both external and marbling fat readings. True value-based trading (VBT) is the norm with producers paid on the yield and quality of carcase components and related 'value' items including raising claims, market eligibility and individual brand attributes.

Producer-generated data will be accessed electronically and linked to the individual animal electronic ID and intrinsic properties of the animal. Producer-to-processor relationships will be based on open and shared data and closer to an 'open book' partnership than the adversarial nature of past decades.

The paradigm shift from trading on averages to VBT will have driven a dramatic efficiency improvement in the production and processor sectors.

For store cattle trading, while weight has remained a component of value and visual appearance continues to be observed, performance prediction programs (finishing potential) combining past performance history, genetic data and scan outputs are used to optimise targeting of individual cattle to different market specifications.

Advancements in technology such as the high definition digital, spectral and thermographic cameras and

sophisticated scan technology from x-ray and other systems has established maturity types from frame, muscle and fat indicators to produce standard descriptions used extensively for trade description and as input to programs managed by grass and lot fed fatteners.

Advanced scanning of finished cattle has provided vastly improved individual animal assessments and is routinely used by buyers and finishers to assess market readiness and adherence to specification.

For commercial and registered cattle breeders significant changes in performance recording have generated a substantial shift in data recording and utilisation by commercial breeders with the new data a principal driver of VBT throughout the supply chain.

The rate of genetic change has accelerated through the use of genomic and progeny data in a manner similar to the dairy industry. The incorporation of MSA carcase data has dramatically improved estimation of carcase traits and registered breeders now extensively use commercial client data to drive accelerated genetic improvement. Advances in genomic evaluation and reduced cost of gene marker analysis, in conjunction with premiums for cattle with data, have led to most commercial cattle being analysed and the data stored in genetic databases. Cattle are now principally described by EBVs and genomic predictions rather than in traditional breed terms.

Verified age attracts a premium with actual date of birth, week, month and season of birth used commercially with differentiated payment according to market requirements.

Breeders almost universally use electronic whole of herd recording systems and record health treatments, weight, age, HGP status and a wide range of other data. Industry data protocols provide access to multiple databases and the compilation of data at any supply chain step. The combined data from farm records, genomic testing and subsequent scanning is grouped using the NLIS tag as a key and assembled for use in subsequent cattle transactions of store or finished cattle.

A VIBRANT AND TRANSPARENT LANGUAGE

In the recently-launched MISP 2020, Minister Joyce outlined in his introductory message that:

'Ultimately, the red meat industry's key output is consumer products. The expectations of consumers and communities – in Australia and overseas – in relation to quality, integrity and production are on the rise. Traditional roles and processes need to be challenged and market expectations must be assessed, understood and clearly communicated. Production decisions and investment must be evidence-based, utilising the latest technologies in information management, communication and market analysis'.

KEY MESSAGES FROM THE MISP

▶ A key to the industry's success will be our ability to optimise the systems, technologies and practices within our immediate control. Of increasing importance is our ability to ensure these elements are used to *actively align our practices with consumer and community expectations.*

▶ *Our industry's true competitive advantage lies in the quality and integrity of its products and systems* throughout the whole supply chain. We must accelerate this focus, guarantee its veracity and actively pursue and differentiate markets that value and will pay for these credentials.

▶ We must identify and implement industry systems that can *objectively measure*, transfer and drive product value and integrity throughout the supply chain. This includes the need for timely and precise communication between our customers and our supply systems.

▶ We must develop systems and policies to underpin the industry's need to differentiate prices according to defined performance against key quality and integrity attributes (value based marketing) *as assessed by objective measurement and assurance systems*. These endeavours will support the industry to *transition from price averaging systems* and will require the support of whole-of-supply-chain *electronic data exchange* capability with open and transparent access by all relevant parties.

RECOMMENDATIONS

Arising from the literature and scientific review, development of the Working Consultation Paper and industry consultation, a series of seven themes have been developed in relation to potential enhancements for the Australian beef language. Within each theme the White paper offers specific recommendations, a rationale and observations on potential industry benefits. A summary of indicative implementation timeframes for each of the recommendations is included as an appendix.

1. FROM CARCASE TO A WHOLE OF CHAIN LANGUAGE

The AUSMEAT language was developed in the 1980's to describe a carcase and product in a carton to enable clear communication between trading parties. Industry knowledge in subsequent decades has benefited significantly from the industry's focus on scientifically based research into transformational technologies – particularly in the areas of eating quality and objective measurement.

This has placed the industry in a strong position to take advantage of opportunities created by evolving marketplaces, which through demographic change and the rapid uptake of new communications technology, are now more diverse demanding much more targeted information and products. The rise in the number of branded beef products is testament to the way the structure of the Australian beef industry is changing, underpinning changes to the way supply chains are structured and production processes are organised.

As brand owners create their own messages and quality specifications they now draw on information from all parts of the supply chain. This has created a challenge for the language to take a more holistic view of the supply chain, to incorporate new technologies and access changing information structures on an on-going basis. This will ensure the vast array of information becoming available has underlying integrity and can be efficiently incorporated into company QA structures.

As part of this process an integrated language with standardised terminologies and description can ensure each sector can easily communicate, facilitating trading and communication at different points of the chain.

While the current language has a well-developed carcase language (meat language) the 'livestock' language and consumer 'meal' language (product outcome descriptions) are considered important inclusions to the language and handbook as they are integral to trading and communication requirements.

The speed of change will be driven by the brand owner's ability to extract the necessary extra value from differentiated markets. However the trend for technology to deliver increased market power to the consumer at the same time as facilitating supply chain and communication efficiencies will continue. The language used by brands speaks directly to the consumer. Inclusion of information identified by market analysis as important to consumers and underpinned by scientific rigour, continues to align the beef industry with a sophisticated global food industry which is consumer-centric and relies on market segmentation to extract full value from their product range.

Under new and emerging market conditions it is considered important that the beef language continually evolve to provide a framework for easy access of auditable information and trading descriptions for key quality and provenance outcomes in addition to base carcase description. To achieve this verifiable information will be required from production through to consumption and consumption back to production, necessitating a whole of chain approach.

1. RECOMMENDATIONS

That the Australian beef language be constructed to provide a whole of chain framework for all necessary trading descriptions to facilitate information transfer at all points from conception to consumption. For operational purposes usage could be predominantly in three sectors: livestock and genetics (livestock language), beef carcase and carcase components including value-added product (meat language) and consumer product descriptions (meal language).

To facilitate practical adoption it is further recommended that;

1.1   Common terminology be prescribed and used wherever possible within each language sector.

1.2   Individual traits be defined in "outcome" terms with provision for alternate measurement technologies linked to a common standard.

1.3   That an accuracy indicator be reported in association with alternate measurement technologies to facilitate appropriate industry implementation.

RATIONALE

A fully transparent supply chain requires a seamless transfer of information and data between all sectors of the value chain. Clear communication is assisted by use of common terms across sectors so that, for example, descriptive terms for fatness or muscling in seed stock, store, live export and finished cattle marketing should directly reflect those applied to carcase description.

The definition of traits such as muscle, fat and lean meat yield can remain constant while alternative existing and new technologies may be utilised in their measurement and evaluation. The associated accuracy indicator, as currently used in genetic evaluation, provides guidance as to their relative value and risk in breeding, payment or other applications.

INDUSTRY BENEFIT

▸ Aligning language components will radically improve the transparency, ease of access and assimilation of whole of chain data to support company branding and delivery of contemporary consumer products.

▸ This new language framework has significant industry benefit in supporting value chain initiatives.

IMPLEMENTATION, TIMEFRAME, CHALLENGES, OPPORTUNITIES

The logic of aligning all language components was widely agreed through the consultation process. Despite this agreement it was felt that achievement in some sectors could be challenging, for example in the livestock sectors (seedstock, breeding and live export) which traditionally have been less directly exposed to slaughter outcomes. It is believed that the challenges which have been identified reinforce the need to address the recommendation.

2. TRANSITION TO AN 'OUTCOMES' BASED LANGUAGE

As outlined in the MISP the systems, technologies and practices related to the quality and integrity of Australian beef products must be better aligned with consumer and community expectations. A key factor in achieving this is to facilitate inclusion of outcomes delivered by current and future technology into the language.

In this context, 'outcomes' are defined as *tradeable descriptions directly describing a desirable product attribute (such as eating quality (EQ), carcase yield or % lean or fat) which are likely to result in price differentials within trading environments.*

This would result in a need to expand on the current language which focuses on the physical attributes of beef products. While the outstanding strength of the current meat language is its flexibility, allowing virtually any type of beef product to be described and successfully traded across domestic and international markets, it is based on objective or subjective description of observed traits that, by and large, are understood by those trading and reflect their experience and common trading practice. The disconnect between the common traits described and the consumer experience to be offered however is a fundamental concern in regard to meeting the needs of a more consumer-centric trading environment.

This is an area where change will need to progress carefully and logically to avoid disrupting existing trade relationships.

2. RECOMMENDATIONS

Recommendations in this section are ordered to broadly reflect the sequence in which changes could be commenced. Naturally, there will be a cascade effect where the benefits of the initial recommendations will flow into and enhance those later in the list.

2.1   That the existing *A* cipher for BEEF be changed from *A* to *ANY*.

2.2   That the existing basic category of Bull *B* be transferred from primary to alternative category. It is recognised that this will be legislatively challenging.

2.3   That the definition of Bull be changed to include any entire male (i.e. those carcases with primary sexual characteristics), other than those described within the existing 'Veal' basic category, or castrated males exhibiting secondary sexual characteristics.

2.4   That a new cipher *EQG* (Eating Quality Graded) be established in the alternate category to identify beef and veal that has been graded through the MSA (EQ) system.

    2.4.1   That there be an addition to the Handbook of Australian Meat (HAM) of MSA cooking style descriptions for use in conjunction with *EQG* eligibility without cut specification (for example, beef for stir-fry, beef for roast, beef for slow cooking).

    2.4.2   That the MSA EQ matrix be promoted as a primary retail product description.

    2.4.3   That optional cattle age verification supported by appropriate audit arrangements be introduced and be considered as an alternative to current dentition categories.

2.5   That all cattle should be eligible for grading through the MSA (EQ) system.

2.6   That the current dentition and days on feed (DOF) eligibility component for grainfed cipher(s) be replaced by a definition requiring despatch from an National Feedlot Accreditation Scheme (NFAS)-accredited feedlot having been fed a high-energy ration for a specified number of days, and be eligible for MSA grading.

2.7   That consideration be given to adopting UNECE production and feeding system description codes to facilitate phasing out the use of 'grassfed' as a generic description for not-grainfed and include a new specified 'exclusively pasture or forage fed' cipher.

2.8   That a standard be established for lean meat yield % (LMY%), potentially called Australian Beef Yield (ABY%) as a carcase yield based description. An accuracy % should be included in the description, reflecting that alternative technologies may be used to measure this attribute.

2.9   That the proposed *EQG* cipher be available for use on veal carcasses when supported by sufficient eating quality research including evaluation of sex effects.

RATIONALE

2.1   Current concerns regarding the misunderstanding of *A* can be addressed by changing the cipher to *ANY*, a descriptor that is highly unlikely to be confused with a premium 'A' grade.

2.2   The transfer of Bull to an alternative category still provides the ability to separately specify bull beef where required but also allows it to be merged with beef from other sexes without distinction where appropriate. Whilst there is no question that meat from older bulls is generally of low eating quality, scientific research has shown that young bulls have a similar eating quality to heifers and steers and can be included in the current grading system. Welfare pressure or a reduction in the use of hormonal growth promotants may increase the number of young bulls coming into the supply chain. Young bull production is already common in New Zealand and predominant in many European countries. Where any bull sex effect is already accounted for in the grading process this product should be able to be merged with that of equivalent EQ without the complexity of having to be segregated.

Should this recommendation be regarded as too challenging from a legislative or other perspective, an alternative approach may be to modify the SSC (secondary sexual characteristics) definitions to remove entire males that have met *EQG* definitions from the bull *B* basic category.

2.3   The definition of Bull should be changed to include any entire male (i.e. those carcases with primary sexual characteristics), other than those marketed within the veal category, or castrated male exhibiting secondary sexual characteristics as the latter are difficult to accurately assess and standard industry application is difficult. Clear description of bull sex, facilitates accurate eating quality grading where sex is utilised in the grade calculation.

2.4   Introduction of the *EQG* alternative category for MSA-graded carcases directly describes a consumer outcome. By replacing dentition and sex categorisation, neither of which have any useful EQ relationship, carcase sorting, boning room management and product codes can be simplified to support branding within a more meaningful and simplified framework. When applied the *EQG* would replace existing dentition and sex ciphers. The lack of scientific support for dentition as either an age or eating quality indicator suggests it could progressively be phased out as the core language description base for alternative categories.

For carcase components that do not meet satisfactory standards at initial grading there are two alternatives: a) scientific validation to certify that further value-adding processes have increased product quality to meet EQ standards, and b) processing for products such as grinding beef, defined by manufacturing specifications, such as lean content, pH and microbiological criteria.

2.4.1   Product which has been MSA graded carries an EQ score (0-100) according to how it will be cooked. As multiple muscles may have the same cooking style and eating quality outcome it is important the language facilitate packing of multiple muscles or portions by cooking style. The addition to the Handbook of Australian Meat (HAM) of cooking style descriptions for use in conjunction with *EQG* eligibility will align the language with currently used descriptors.

2.4.2   Evaluation of MSA data indicates that cut description can be extremely misleading with a range in EQ scores often of 70 points (on a 1 to 100 scale) typical for a majority of cut x cooking style combinations. Despite the challenge, evidence shows that a transition from traditional cut to a simplified quality x cooking style description (the MSA Matrix) will address a major cause of consumer confusion and improve purchasing confidence.

Widespread adoption of the matrix would also provide dramatic reduction in cut description terminology with the potential to entirely replace the Retail Cut Register with a relevant small number of accurate direct consumer outcome descriptions.

2.4.3   There is considerable industry confusion in the use of age, dentition and ossification. There is a poor relationship between these three traits and they need to be clearly treated as separate traits and not confused. Introduction of a voluntary verified animal age system will allow age to be directly described. This would have to be accompanied by development of suitable audit methodology to verify an animal age trait.

Addition of an *EQG* alternative category and alternate use of verified age in EU import arrangements should be achievable under current trade protocols. *EQG* can be negotiated as a detail change within the existing alternate category.

COOKING STYLE					
Grill	**Roast**	**Slow Cook**	**Stir Fry**	**Shabu Shabu**	**Yakiniku**
Brand A++	Brand A++	Brand A++	Brand A++	Brand A++	Brand A++
Brand A+	Brand A+	Brand A+	Brand A+	Brand A+	Brand A+
Brand A	Brand A	Brand A	Brand A	Brand A	Brand A
Underpinning attributes delivered by branding					

MSA Predicted EQ

2.5 Making all cattle eligible for grading through the MSA eating quality system will allow streamlining of production throughout the supply chain and remove duplication of systems. This requires additional research to enable grading of cattle currently excluded from MSA (e.g. young and mature bulls, cattle that have been sold through saleyards or lots that have been mixed prior to dispatch). High priority should be given to direct measurement of stress at slaughter (and determining the impact on eating quality beyond that described by current MSA grading inputs) as identification of a stress indicator would allow an outcome based grading input to replace current MSA pre-requisites regarding mixing and transport.

2.6 Current grainfed ciphers reflect the knowledge available at the time of their development. Scientific advancement since then has seen direct eating quality description supersede the use of dentition and DOF as EQ surrogates. The use of dentition and DOF has compromised industry efficiencies with no benefit in product consistency. It is likely that a minimum number of days on feed will be required to ensure animals have adapted to a high energy ration with subsequent changes in fat and meat colour traits. It is also envisaged that the market could still specify an agreed days on feed over and above any set minimum that meets buyer and seller specifications. By changing the definition to require an MSA EQ graded outcome the ciphers will reflect performance while retaining integrity in describing a genuine grainfed product.

2.7 Currently a 'grassfed' description is applied to those cattle that do not comply with the grainfed cipher. These cattle have often been fed a combination of grass and grain supplementation. There is an emerging market for beef that has only been grown on pasture or forage based systems. To avoid confusion in the market place, there is a need to differentiate feeding systems. A suitable international framework is provided within the UNECE bovine language which is recommended. The UNECE defines EAN/UCC codes that provide description for grainfed, forage fed and exclusively forage fed.

2.8 There are a number of different technologies to predict LMY% currently available or under development. As technologies improve or come on-line they could be implemented in any plant. It is likely that different plants will use different technologies because of differences in throughput, accuracy and investment required to support their processing platforms. As a result, it is important that a standard industry definition be established for LMY% as a carcase yield based description – but this does not mean that LMY% becomes a mandatory requirement. Such a standard (potentially the Australian Beef Yield) should have an accuracy % included in the description, reflecting that alternative technologies of varying accuracy may be used in different plants.

The term LMY% has been widely used to date but may be considered as a synonym for muscle. The term could be replaced by ABY%, muscle or separate muscle, fat and bone indicators if preferred by industry.

2.9 Veal is traded as a distinct meat category and regarded as sufficiently different in colour and cut weight to make mixing with beef inappropriate. This distinction becomes less valid in the heavy (70.1 to 150kg) carcase weight range as does the lack of distinction of bull sex. Consequently it is recommended that non castrated males marketed under beef descriptions be designated as bull, together with castrates with pronounced SSC. Given the required EQ research is conducted use of the *EQG* cipher could be extended to veal and provide a clear indication of consumer outcome. The potential impact of bull sex would need to form part of this research and may require a bull definition for heavy veal carcasses to be MSA (EQ) graded.

INDUSTRY BENEFIT

- Use of the *EQG* alternative category removes the need to use other ciphers on the same product. As a result sorting and product code use within plants extensively using MSA grading would be significantly reduced.

- The addition of MSA cooking style descriptions to the HAM would simplify and reduce product codes while providing more flexibility in muscle disposal with improved consumer outcomes and simplified retail or wholesale description. Adoption would decrease reliance on the Retail Cuts Register.

- The MSA Matrix provides an increased guarantee to brand owners that their product will perform as described, underpinning targeted branding into different market segments and providing a basis for developing brand value.

- The MSA matrix also delivers a simplified description to end-consumers guaranteeing satisfaction. Improved consumer confidence and greater alignment of expectation with the actual eating experience is fundamental to repeat purchasing.

- The transferring of Bull (*B*) from primary to alternate category would facilitate inclusion of graded beef from young bulls.

- Grading of all cattle and subsequent description on an outcome basis – either EQG or that relevant to manufacturing – would allow beef to be a fully contemporary product where performance is clearly communicated and can be guaranteed.

- The ability to grade all carcases through MSA would provide an opportunity to harvest specified primal cuts from carcases previously excluded.

IMPLEMENTATION, TIMEFRAME, CHALLENGES, OPPORTUNITIES

Elements of the recommendations included in this theme will vary in their attractiveness to industry and the timeframe for which they are considered. For example:

- The change from *A* to *ANY* could be implemented immediately.

- The movement of Bull "B" from the existing basic to alternative category is a first step towards making the language outcome focused and simpler in the longer term. It is understood that this may be administratively challenging for some export markets.

- The development of a new cipher *EQG* in the alternative category is a recommendation that could be immediately implemented.

- Further research will be required to enable grading of some cattle types and those currently outside MSA minimum criteria. If research can deliver a stress measure and eating quality relationship then existing MSA delivery requirements could be replaced by the direct outcome measure.

- If no stress measure is identified then further research on alternative pathways including ship, train and extended road transport together with mixing through marketing systems and alternative resting and recovery strategies will be required to adequately quantify EQ risk and allow grading of currently non eligible cattle.

- A significant proportion of cuts may fail to reach minimum EQ standards off some cattle populations. These may be described under manufacturing descriptions, such as 85% CL, or be marketed as traditional commodity cuts. The potential to improve many of these cuts through value adding processes warrants research and EQ validation to provide pathways to achieve an EQ based validation.

- The inclusion of a 'bull' option in the MSA model will require further consumer testing of Australian consumers to validate data from international studies.

- Work is currently underway to develop X-Ray (CT and DEXA) and high definition digital and spectral cameras as tools to predict LMY%. Implementation of this technology would best be coordinated with development of value based marketing schemes by individual companies.

Discussion within the consultation process canvassed all of the above matters. Support for change to the bull definition and *B* category was mixed whereas the change from *A* to *ANY* was widely supported and endorsed. Strong support was obtained for the introduction of *EQG* whereas widespread adoption of the EQ matrix was regarded as more long-term aspirational although there was very strong agreement that individual brands would be the principal delivery basis for EQ systems and that these may choose to adopt some measure of the matrix approach in the short term. Addition to the HAM of cooked outcome descriptions was generally endorsed.

Opinions were polarised regarding introduction of optional cattle age verification with many interviewees, representing both extensive and small scale producers from northern and southern Australia, supporting the recommendation and regarding it as practical to implement whereas others indicated limited support and raised concerns regarding verification, potential discounting and other issues.

The view that all cattle should be MSA graded, or eligible to be graded, was remarkably strong with some parties promoting mandatory grading.

Views on changes to grainfed definitions and separation of cattle fed exclusively on pasture or forage based systems from those that had some level of supplementation or rejected from feedlot programs, varied according to each sector, with the specific criteria more debated than the general need for improved definition which was largely supported.

Support for a definition of LMY was varied with clear support for a standard definition endorsed by a majority, and in particular by those contemplating or advocating value based marketing systems. Concerns were raised by some producers who feared that a concentration on LMY could lead to decreased quality (citing Europe as a relevant example) or be used as a discounting tool by the processing sector.

3. ONGOING DEVELOPMENT OF INDUSTRY STANDARDS

Rapidly emerging digital technology is placing the consumer in an unprecedented position of power. Empowered by the increasing connectivity of their digital world consumers have access to instant and vast amounts of information and increasingly they are demanding more information about quality outcomes, where their food is sourced and how it is produced. This will drive retailers and food chains towards scrutiny and increasing transparency of their value chains.

At the same time, it is confidently expected that there will be further brand differentiation developed around the use of 'raising claims' and provenance stories such as pasture fed, organic, grainfed, natural, hormone free, breeds and regional sourcing.

It is unrealistic to expect that third-party customer demands for audited high level quality assurance programs will stop at the abattoir. As the use of raising claims increases, and further assurances as to sustainability, welfare and other management treatments coupled with highly visible value chains increase, it must be expected that credible QA structures and appropriate audit provisions will be demanded. It is believed that substantial development beyond the existing Livestock Production Assurance (LPA) base standard will be demanded by many supply chain partners.

3.   RECOMMENDATIONS

3.1   That industry continues to develop standards for generic definitions that will underpin principal 'raising' or 'provenance' claims used by brands. Individual brands will be the responsibility of the brand owner. These standards should be developed by industry and held by AUS-MEAT. The cost of defending these standards in any raising claims dispute should be the responsibility of the brand owner.

3.2   That a suitable mechanism be developed for use in conjunction with principal raising and provenance claims that comply with agreed national (and where applicable global standards) to enable clear distinction between these and alternative individual programs.

3.3   That industry developed standards focus on high-level, well differentiated raising and provenance claims to provide clear national definitions and endorsement in conjunction with the legislative structure for welfare and animal health standards. Industry should not seek to develop standards for minor variations which should be the provenance of individual brand owners (e.g. a definition of 'eco-friendly').

3.4   That efforts to rationalise auditing of industry and purchaser standards, and in particular on-farm audits, be aggressively pursued.

RATIONALE

3.1   Credible and transparent language will be increasingly required from the value chain at all points from conception to consumption and back.

3.2   Industry opinion is extremely divergent on the issue of common national versus individual brand-based standards and their enforcement. To accommodate this difference it is suggested that a single symbol/device[2] that can only be used in association with agreed whole of industry standards be developed. This symbol could, for example, differentiate an audited national standard for entirely forage fed from individual brand owner claims of varying veracity. To maximise industry control it is suggested that such standards and the symbol/device be lodged with AUS-MEAT as custodian rather that within the official Australian Standard (AS) structure.

3.3   The recommendation that only principal raising or provenance claims be supported by national standards seeks to contain industry expenditure to major areas and to avoid involvement in multiple minor variations which may be developed as individual brand attributes.

3.4   Increased audit requirements, including detailed on-farm programs to a level equivalent to the NFAS utilised in the feedlot sector, British Retail Council (BRC) for international retailers and existing systems adopted in processing plants, will be adopted by the beef industry. To minimise the cost and inefficiency of multiple audits and associated recording, with many overlapping components, a concerted effort is warranted to harmonise third party auditing. Active collaboration with international agencies such as GS1 may assist in this regard.

2   Like a Trademark

INDUSTRY BENEFIT

▸ It could easily be argued that 'raising claims and provenance' should correctly be underpinned, validated and guaranteed by the specific brands who offer them. These recommendations agree with that sentiment but reflect a concern that there is a risk associated for all brands from inappropriate 'claims' and this warrants the development of over-arching standards.

IMPLEMENTATION, TIMEFRAME, CHALLENGES

The increasing use of 'raising claims and provenance' in brands would indicate that these recommendations should be considered in the short term. Industry is divided on how this should be handled with some suggesting standards held by industry whilst others argue that brand owners are responsible. The recommendation that national standards apply only to principal high level definitions seeks a balanced approach to these views and recognises that importing countries are likely to demand underpinning standards, and in some cases, verification systems for such claims.

4. ALIGNMENT OF LIVE ANIMAL AND CARCASE LANGUAGES

In contrast to the AUS-MEAT "meat" language, livestock description for type, frame score, muscling, fatness and even breed is far from uniform with a plethora of terms commonly used across Australia. While the AUS-MEAT livestock language is the official language it has not been reviewed since 1993, no electronic copy appears to exist and responsibility for its further evolution and custodianship has been reported as confused.

There are essentially no objective terms to describe the current condition or expected performance of store cattle although emerging technologies are expected to offer huge advances. The language used to describe registered cattle, encompassing genetic and type description, should be universal across registered, commercial and live export segments. Language and associated systems should facilitate comprehensive utilisation of commercial data in genetic evaluation and reciprocal use of genetic inputs in commercial cattle evaluation and selection. These issues demand consideration if the language is to be used to potential.

Within the beef language there are a number of traits such as dentition, ossification and animal age which attempt to describe carcase maturity and hence are considered to have eating quality implications. Generally the individual relationships with eating quality are poor and there are better ways to describe eating quality by other means such as MSA and these should be encouraged. Sometimes these descriptors of maturity will be market specific (e.g. a threshold age for EU markets) and optional systems to facilitate this should be put in place.

The language of 'livestock' and 'meat' needs to be common so that description of an animal ready for slaughter aligns as precisely as possible to the description of it as a subsequent carcase.

4. RECOMMENDATIONS

4.1   That an expert group review the Bovine Livestock Language with the aim of creating a section within the existing language standardising terminology and ensuring common description across all trading and production categories including registered and commercial cattle sold by live export or as domestic store or finished cattle. This review will standardise the language used by all parties so that carcase and chiller assessment data can be linked to genetic evaluation programs.

4.2   That this new language be aligned with the AUS-MEAT carcase language through the use of common terminologies between live animal and carcase description to facilitate clear communication.

4.3   That standard muscle and fat scores be utilised in live cattle and carcase description with this description replacing condition score for live animal and the use of butt shape, P8 fat and rib fat in carcase yield description. Addition of a 0 fat score reflecting emaciated cattle at welfare risk is recommended for inclusion in the muscle and fat score system.

4.4   That the frame score calculation of the live animal be standardised, particularly in the light of new automated technologies to facilitate useful type description and relationship to possible final outcomes.

4.5   That efforts be made to achieve common description of dairy and beef cattle where they are utilised as meat.

4.6   That an optional animal age description of day of birth/month of birth/season of birth (dd/mm/yyyy, --/mm/yyyy or Jan-June/yyyy) be established and be the sole official indicator of animal age where this is specified. These alternative age declarations should utilise an NLIS field to facilitate download at transaction points and inclusion in databases. It is further recommended that dentition and ossification measures be reported as such and not promoted or published as having any age relationship.

RATIONALE

4.1   The current live animal language does not relate well to the 'meat' language. A live animal language that can be applied uniformly across Australia is essential for the interchange of information.

The current seedstock and genetics descriptions are too far removed from commercial cattle and carcase descriptions, and need to be harmonised to facilitate a greatly increased use of commercial data in seedstock evaluation. For example, the current livestock language has different breed codes to those used within BREEDPLAN and does not include structural descriptions or genetic values such as estimated breeding values (EBVs) or gene markers. Livestock exports utilise different structural descriptions under ILRIC than those commonly used in breed standards or sale catalogues.

Changes under discussion regarding BREEDPLAN evaluation of pooled breed data and incorporation of commercial progeny data including MSA grading records offer the potential for dramatic improvement in genetic evaluation of the Australian beef herd and productivity gains similar to those achieved by the dairy industry. A lack of intent and action in this regard may cause the industry to fall behind international competitors. For example, in Ireland, breed, sire, dam, date of birth, farm, animal health and carcase data are automatically linked in a national system utilised for genetic evaluation. The dairy industry has the equivalent system on a global basis.

Currently, in contrast to dairy, the range of quality within the beef herd is not quantified or widely appreciated. A huge value range within visually similar mobs of cattle is hidden within the conventional averaging applied across sectors in transactions at live animal and carcase level. Identification of animals at both ends within this range provides an exciting potential for dramatic improvement in industry efficiency. This difference has been documented at several hundred dollars per head, sufficient to make an appreciable difference to beef's competitiveness if applied to price, or enterprise profitability.

4.2   The AUS-MEAT language has high domestic and international recognition and the livestock language can capitalise on this high profile.

4.3   There should be accurate alignment of live animal and carcase fat and muscle descriptions. It is estimated that there are currently up to 15 different condition, fat and muscle scoring systems, all differing in features such as scale (0 to 5, 1 to 6, 1 to 8) and alpha/numeric designations. These need standardising with the possibility of adopting fat and muscle scores in lieu of P8 and butt shape measures noting that ultimately both may be delivered by objective technology. Addition of a 0 fat score as recommended by other expert groups will allow objective description and distinction of low body condition cattle including welfare assessment for transport.

4.4   Frame score is a useful means of ranking animals on their relative mature size which can be used to predict the potential of the animal to finish in both grain and pasture finishing systems. Currently there is no standard used by industry to assess frame score or animal type. As this measurement has the potential to be objectively measured using laser technology it is critical that the standard be defined. While the value of a store animal might be argued to relate as much or more to potential growth and final state as to the purchase weight and condition, virtually no description of potential exists. Current and new technologies and improved data interchange may be harnessed to accurately predict subsequent performance and target markets, providing

substantial benefits in valuation. It is envisaged that genetic, age, prior health and growth data combined with objective based muscle, fat and frame evaluation may be utilised. Standard language definitions and data interfaces are required.

4.5   Compared to many other countries the dairy industry makes only a relatively small contribution to beef production in Australia. There is great potential to grow out and finish dairy animals for beef. Currently the systems used to describe beef and dairy animals in terms of fat and condition scores are not aligned. Alignment of these live animal description systems would facilitate the development to finish of dairy-type animals in beef production systems in addition to standard description of cull cows.

4.6   Age is not routinely recorded in Australian beef production systems and there have been attempts to use proxies such as dentition or ossification score to provide some equivalence. Unfortunately there is a poor relationship between measures of age, ossification score and dentition which makes this equivalence difficult. If age is required by a particular market it is proposed that age measured as day of birth / month of birth / season of birth (dd/mm/yyyy, --/mm/yyyy or Jan-June/yyyy) be established and be the measurement for age. These would be much more accurate indicators of age than either dentition or ossification score. Actual age measures should not be confused with dentition or ossification and no equivalence should be published or promoted. In order to be sustainable, chronological age needs to be underpinned by an auditable industry standard.

INDUSTRY BENEFIT

▸ These recommendations provide the potential for higher rates of genetic and herd improvement in beef cattle, including crossbreds, nearer to those achieved in dairy. An increased rate of improvement provides the major opportunity to close the efficiency gap with chicken and pork.

▸ They will deliver improved communication up and down the value chain, providing greater clarity of market signals, supporting better decision making and accelerating efficiency gains.

▸ Substantial improvement in description and valuation of store cattle is possible and allied to improved industry performance by improved targeting of end market points and reduced non-compliance.

IMPLEMENTATION, TIMEFRAME, CHALLENGES

Activity in this theme should be commenced in the short term, although it will take some time to achieve consensus on a live animal language that addresses all requirements. Primary challenges and components include:

▸ An urgent need to agree on description standards including breed, muscle and fat, pregnancy, type and genetic parameters.

▸ A need for improved integration of genetic evaluation between commercial and registered seed stock cattle breeders. This must include uniform evaluation of cattle regardless of breed composition, including crossbreds, and greater utilisation of commercial progeny growth and carcase data.

▸ Further research and development of objective measurement technology to describe animal muscling, fat and frame parameters.

▸ Agreement on data exchange standards to facilitate ready exchange of data at all transaction points including required access permission protocols. Interfaces need to include NLIS, genetic data bases, farm and feedlot recording systems, saleyard or electronic sales platforms and processor records.

▸ Activation of the animal age facility within NLIS and validated by accompanying electronic National Vendor Declaration (eNVD), including provision for day, month or season input.

▸ The current use of dentition standards in Australian legislation for the veal primary category could complicate change.

These objectives were largely supported through the consultation process although, based on past experience, many predicted obstacles in achieving cross-sectoral collaboration. The potential benefits were seen however to demand aggressive efforts to deliver change. Recent activity in the MLA Livestock datalink project was seen to be a useful start in some of the related areas.

5. OBJECTIVE MEASUREMENT AND SYSTEM INTEGRITY

The consultation process highlighted the perception in many quarters that there is a lack of trust between producers and processors. This relates both to the integrity of the traits being recorded and to the ability to adequately resolve claims. This issue needs to be addressed, but perhaps more importantly be seen to be addressed, to help restore confidence.

Many of the measurements currently recorded on the slaughter floor or in the chiller are subjective scores and as such are subject to variation and interpretation. This can be addressed in the medium to longer term by investing in objective technology to either measure new traits or to more accurately measure the current traits. New technologies need to be reliable and cost effective.

Genetic technologies such as markers from DNA or proteomic analysis are likely to revolutionise animal description and may well be carried forward as carcase grading inputs. Further digital or x-ray based systems may substantially change measurement of live animals and associated sales description and end market targeting.

Advances in digital and x-ray technology and image analysis provide a number of opportunities to measure new traits such as carcase lean meat yield percentage (LMY%) or carcase composition as muscle, fat and bone. This option will provide a standard yield estimate that can be part of feedback to producers for use in genetic and management programs. It is likely that the investment in technology will vary depending upon the processor. In effect this may result in a range of technologies being used to measure traits such as LMY%.

Hyperspectral imaging, NIR, NMR, and further technologies may well supplant existing grading inputs or be added to aid prediction of carcase attributes.

It is critical the language framework caters for addition of such technologies as and when they become available.

5. RECOMMENDATIONS

5.1   That, wherever possible, the language should describe a common outcome (or trait description) able to be produced from alternative technologies where applicable. The trait measure needs to be auditable and where appropriate reported with an accuracy description.

5.2   That accurate objective measurement for live animal, carcase and cut descriptions be actively pursued and incorporated into language when cost effective under commercial conditions.

5.3   That the measurement of inputs to key underpinning industry systems be continually monitored on an industry-wide basis and strengthened as appropriate to ensure the integrity of these systems. In the immediate timeframe measures and methodologies should be adopted to monitor and ensure repeatability and accuracy of subjective grading traits.

5.4   That the current QA-based integrity system be strengthened in the immediate future with emphasis on points of ownership transfer. It is critical in this regard that accuracy and integrity be and be seen to be effective. The storage of relevant data, especially at the point of ownership transferral would be useful for any subsequent dispute resolution.

5.5   That carcase muscling and fatness be described by independent muscle and fat scores (based on a similar principle to the EUROP 15 point scale format).

5.6   That a single marbling standard be adopted utilising the MSA standards with optional reporting in rounded 100's. Such a standard must cover the full range of Australian cattle for this characteristic and may require additional standards beyond 1100.

5.7   That, subject to R&D validation, a standard for marbling fineness be defined and introduced into the grading system where appropriate. This standard should not be breed specific.

5.8   That the existing AUS-MEAT meat colour chips for both beef and veal be re numbered in steps of 100 to provide a linear progression and potential subdivision in units of 10 supported and ultimately replaced by objective measurement.

5.9   That MSA grading data be monitored statistically to identify possible variation in grading results and enable early action to monitor and re-train graders where appropriate.

5.10   That further R&D be prioritised to objectively relate existing carcase colour measures to actual consumer appeal and pH

5.11   That the OSCAP grading system and internal pass standards be reviewed to assist in improved consistency.

5.12   That R&D continues to identify improved objective measurement technologies that can increase the precision of predicting outcomes. This applies to technologies to measure fat and muscle in the live animal and carcase, along with tissue distribution within the carcase and intramuscular fat content. This will require continued substantial industry R&D investment.

5.13   That industry education and communication issues be addressed as a priority to increase the level of understanding and co-operation between sectors.

RATIONALE

5.1   The investment from different companies in the technology used to measure carcase traits will vary enormously. Therefore it is critical that the outcome trait is clearly defined. Technology will continue to evolve and will have different cost and complexity. These differences will dictate differential adoption across the value chain. It is not feasible to restrict some participants from using new technology on the basis that it is not commercially attractive to others at that time.

For example, marbling may be measured conventionally by a trained grader, by a hyperspectral camera, by ultrasound or by digital image analysis. Similarly, carcase yield may be measured with extreme accuracy with CT scanning, at lesser cost and accuracy by digital technology and at a base level by visual carcase assessment. In each of these examples the resulting measure may vary in accuracy. By publishing an accuracy % in conjunction with the reported scores this accuracy level can be factored into decision making, for example into genetic evaluation.

5.2   As noted previously, many of the measurements currently recorded on the slaughter floor or in the chiller (and on the live animal) are subjective scores and as such are prone to variation. This can be addressed in the medium to longer term by investing in objective technology to either measure new traits or to more accurately measure the current traits. New technologies need to be reliable and cost effective.

5.3   As technology evolves there will be a range of equipment that is capable of measuring various traits. These technologies will need to be continually monitored to ensure the integrity of these systems.

5.4   In the light of such rapid changes it is critical that the current QA-based integrity system be strengthened. To maintain trust between the various industry sectors this will be particularly important around the points of ownership transfer and where price is determined. As a way of improving trust and confidence between industry sectors consideration needs to be given to collection and storage of data that if required could be used to assist in any future dispute resolution on the accuracy of grading measurements.

5.5   Whilst there is a large development push to develop X-ray technologies to measure carcase yield it will be some years before these technologies are at a stage where they will be accurate, robust and cheap enough for the processing industry to install in most plants. In the interim it is recommended that carcase muscling and fatness scores by independent graders (or perhaps digital technology) be used to describe carcase yield traits. This will allow the industry to develop the infrastructure associated with the use of these measurements to underpin value based marketing systems, rather than put everything on hold until the technologies are at a suitable stage.

5.6   The industry currently uses two standards to describe marbling in carcases. Whilst these are related they do result in some confusion. There was general industry support that a single system be used and that it be capable of describing increments of 1/10th or 1/100th increments in marbling. The major concern arising from the consultations is that any new marbling scale be relevant to the entire Australian cattle population.

5.7   Experienced meat graders believe there is an eating quality difference between two beef samples of identical intramuscular fat % (IMF%) but differing in the distribution as fine flecks, larger particles or streaks. This is taught in training JMGA, MSA and USDA graders. Objective evidence to support the belief is not strong and requires further R&D for validation. Assuming R&D supports the case for describing fineness objective standards will be required, possibly by adopting a fineness ratio as developed from image analysis by Kuchida et al. The incorporation of a fineness measure has implications for objective measurement technology requiring more sophisticated output than simple IMF%.

5.8   There are concerns by many in the industry that the use of meat colour chips to score meat colour needs to be improved. First, the colour chips could be renumbered to reflect a linear change in meat colour over the range of the chips. This is critical as a number of technologies are being developed that are capable of objectively measuring colour. Collection and storage of meat colour data needs to move away from the current chips and be compatible with digital storage systems. Secondly, further definition is warranted within chips and in particular at borderlines. Re-numbering in 100 intervals would facilitate reporting in increments of 10, very likely to be delivered by objective technologies.

5.9   Currently a single colour assessment of the quartered striploin/rib-eye surface at grading is used as a criterion for many branded programmes and MSA grade eligibility. While the assumption is that this relates to ultimate consumer shelf appeal in packaged form this deserved detailed R&D validation.

5.10   Currently many of the grading measurements are based on subjective scores and as such are prone to variation between graders. Given that grading data is captured electronically it is possible to use commercial grading data to check and monitor the variation in grader scores and offer feedback in real time to help maintain grader accuracy and allocation of grading training resources. The accuracy of graders scores needs to be more transparent to the different sectors of the industry to help restore and maintain trust in the grading process.

5.11   AUS-MEAT has developed OSCAP which is a training tool to help graders assess their current accuracy. As with a flight simulator it provides a highly useful standard training and calibration tool while not being identical to actual carcase observation. This system was developed some years ago with subsequent new versions released. As grader performance continues to improve the standards used to assess grader accuracy need to be improved and tightened to reflect the better performance of graders. Again, transparency of general levels of accuracy would help improve trust between sectors of the industry.

5.12   The development of technology in the human medical and associated fields which is capable of being applied to carcase measurement will continue to grow exponentially. The industry needs to be aware of these developments and any applications applicable to measurement of meat quality and quantity including tissue distribution in the carcase. As the value of the carcase increases there will be real opportunity to use such technologies to better describe and add value to the carcase.

5.13   There was a general consensus among all industry sectors that education resources focused on the beef industry had decreased at a time when there were, potentially, the greatest changes occurring and hence the greatest need to ensure communication and knowledge were improved. At a time when the user-pays principle has led to less resources being allocated to beef industry education the need for the industry to dedicate sufficient resources to arrest the decline in industry knowledge and capacity was noted. In particular, as government resources are scaled back the industry needs to investigate other bodies and means to undertake the education role.

INDUSTRY BENEFIT

▸ As noted in the MISP a key competitive advantage for the Australian industry lies in the quality and integrity of its products and systems.

▸ Greater confidence in the outputs such as predicted eating quality and LMY% relies on the integrity and accuracy of the inputs. Greater transfer and utilisation of animal, carcase and quality data will accelerate improvement in decision making throughout the industry – including genetic progress, management at farm and processing level and the ability to implement value based trading. This is important for brand performance.

IMPLEMENTATION, TIMEFRAME, CHALLENGES

Similar to Theme One, some recommendations can be pursued in the immediate short term (for example, carcase muscle and fatness scores, marbling, meat colour, grading) while others also in the short term require available technology (e.g. LMY%, although the key is that industry should not wait for nor expect one system to suit all) while others (e.g. objective measurements for the live animal) are more likely to be for the medium term and require ongoing research.

There was strong and universal support through the industry consultations for development and application of objective measurement tools, tempered to an extent by a perceived lack of delivery from previous technologies and concerns regarding cost, particularly for smaller operators. This concern was partially addressed by the suggestion that alternate technologies be approved with associated accuracy measures.

Change to a single marbling standard was also well supported with the proviso that any system accommodates the entire population. Principal concerns related to accurate assessment of very high marbling levels. In this regard it was commonly held that objective technology may be necessary due to difficulties in accurate differentiation by graders using current tools. It should be noted that the base AUS-MEAT marbling standards were more commonly used than the MSA standards across this industry segment.

A change to fully numeric meat colour chip standards was also supported with the caveat that while a change to numbering was readily achievable, given a suitable phase in period, a change to the chips themselves was a far more difficult undertaking. Current and ongoing research to link objective colour assessment to the standards was strongly supported as was the need to evaluate pH relationships and the possibility of using pH alone as a grading cut-off.

The use of carcase yield technology was supported by most with some concern regarding the potential for discounting or encouragement of yield versus eating quality. The term lean meat yield was not supported by some interviewees with ABY, carcase muscle or potentially muscle, fat and bone descriptions possible alternatives. An Australian yield standard able to be reported in conjunction with the MSA Index (representing EQ) was generally regarded as desirable.

The need for industry education and improved understanding between sectors was a dominant theme throughout the consultation process. There was unanimous support for additional structured workshops where producers could view abattoir operations and receive detailed explanation of processes, measurement technology and feedback data.

The consultation process also received a number of calls for independent MSA graders. While it may be one way of overcoming some criticisms of the current system, the re-introduction of independent MSA graders would require considerable time and would have cost implications. It is a decision for industry. The recommendations made in this paper are restricted to ongoing improvements in oversight of graders and eventual introduction of objective measures

in place of subjective assessments when commercially feasible to do so.

The consultation process raised concerns regarding variation in carcase trim and payment for hide and offal (the latter being outside the terms of reference for this paper). The AUS-MEAT definition of "standard trim" provides for a maximum allowable trim prior to any mandatory additional hygiene and pathology trimming to address contamination. Actual trim may be less than the standard in response to alternative customer or brand specifications or retention of tails, kidneys etc in some domestic plants. Further, the standard does not apply to processor-owned cattle. The allowable and common variation in product trim coupled with hygiene and pathology trim variation including that applicable to Halal slaughter means that a standard regime would not be practical.

A number of options regarding carcase trim were considered by the consortium but were rejected as recommendations, including moving the point of weighing to immediately post-evisceration and prior to carcase trimming. Rather, the consortium believed that the most efficient and transparent ultimate solution would be the introduction of accurate, standardised lean meat yield assessment, for example using the emerging DEXA or CT technologies. In the immediate term, there is a need for continued ongoing oversight and auditing, coupled with communication and education to build trust in current systems. These recommendations are described in greater detail above and in the background technical papers.

6. DATA CAPTURE FOR SEAMLESS INFORMATION FLOW

The rapidly expanding collection and integration of electronic data across the value chain requires urgent development of systems to ensure this is seamless and effective. Current systems including the National Vendor Declaration (NVD) have been paper-based and create considerable work even at the typical mob or consignment level. In the future, demands for farm-level certification on an individual animal basis will expand and simple but effective communication protocols between farm systems, selling centres, genetic and breed society data and abattoir systems will be essential. Electronic data interchange of provenance and raising claim information is also probable at international retail level, including the possible application at individual animal or retail pack level. Both Australian and international systems will need to link effectively.

6. RECOMMENDATIONS

6.1   That attention be directed to facilitating electronic data interchange between multiple industry databases with linkage via the NLIS ID as a common key. This will require an approval process by individual owners to authorize release of data from a potentially large number of databases at multiple access points and the use of freely shared data to derive maximum benefit. Standard data sharing protocols will be required together with procedures for accommodating new data fields and technology over time.

6.2   As noted in section 5, the storage of relevant data, especially at the point of ownership transfer would be useful for any subsequent dispute resolution.

6.3   Again the recommendation to specify standard output descriptions able to be produced from multiple systems with associated accuracy indicators is reinforced.

6.4   The ability to "attach" individual animal records to mob based NVD declarations is supported as a desirable protocol for all future transaction systems.

6.5   The question of PIC numbers relating to properties versus individual livestock owners should be examined within long term potential requirements for national and international data linkage and the similar but potentially different need to trace the "person in charge of livestock" or source property.

6.6   The potential to interact at individual property or producer level with the United Nations blue number system should be evaluated. This identification system seeks to provide a global network for producer to retail information transfer together with automated assessment of farm practice and eligibility in relation to a plethora of private and government programs.

RATIONALE

6.1   There is a need to develop systems to ensure that data captured from all sectors of the value chain can be readily accessed and transferred as required in a format that is suitable for digital storage and delivery up and down the value chain.

6.2   Current and likely requirements include linkage of genetic data to farm and store stock sale platforms, birth date/period, health, chemical and growth data to live cattle and processing systems and return systems to relate this plus carcase grading data back to producer and herd improvement systems. Further functionality will be required to enable direct consumer communication at the point of retail sale to provide information or reassurance in regard to raising and provenance claims or source properties.

6.3   In the future, demands for farm level certification on an individual animal basis will expand. Equally, the current inability of systems to 'talk' to one another means that huge wastage occurs.

6.4   A mob based NVD cannot differentiate criteria for individual animals. The ability to 'attach' individual NLIS ID, and through these access to relevant data e.g. gene marker detail to an eNVD, addresses this issue.

6.5   Currently a PIC code denotes a property in most Australian states but a person/business entity in others. The ability to locate both or either may be important in traceback activities depending on whether the traceback is triggered by a soil/property related concern or by a livestock treatment/health issue. In the New Zealand system a PIC is a "person in control of livestock". The anomaly across Australian states should be examined against prospective activity requirements.

6.6   The UN, through the GS1 system (which controls global barcode and Q code systems is trialling a 'blue number' system) which in effect uses a GS1 identifier as a unique global property ID. The system although at an early stage is worthy of monitoring due to its potential for global connectivity.

INDUSTRY BENEFIT

▸ These recommendations aim to ensure that full value from accurately and easily transferring data between sectors is realised. This relates to all sectors and interrelates, for example, with detailed and accurate grading data influencing genetic evaluations and genetic markers influencing grading. Of further immediate importance is the ability to keep pace with the explosion of consumer information required to give confidence to 'raising' claims, provenance issues and community concerns.

IMPLEMENTATION, TIMEFRAME, CHALLENGES

These issues need to be addressed in the short term and on an ongoing basis. Most participants in the consultation process supported the need for robust data protocols to facilitate data sharing and transfer. While supporting the principal, a number of parties also drew attention to the potential difficulty of data ownership being across multiple platforms and to past experience in negotiating access to data. It was universally agreed that a single industry database was not a workable option and that the governing principle should be to "connect" all industry data bases with the NLIS ID, at least at animal and carcase level. A majority also agreed that it was desirable to activate the existing age field within the NLIS system to record age but this should be the only additional data stored as an NLIS function.

7. GLOBAL BEEF DESCRIPTIONS

The Australian language and related systems are well recognised internationally already and could be further positioned as the global standard, which would greatly assist the Australian industry as a major exporter. The UNECE Bovine language currently utilises AUS-MEAT HAM codes and descriptions including reference to marbling, meat colour and fat colour standards. It also provides an existing international framework for further description including raising claims and processing methods. Current UNECE work is considering addition of eating quality grading inputs and measurement of consumer eating quality outcomes.

Examples of descriptions used in the UNECE Bovine language handbook (Reference in Appendix B) include:-

3.5.3 Production Systems

▸ *Intensive Production:- Production methods which include restricted stocking, housing and feeding regimes developed to promote rapid growth*

▸ *Extensive Production:- Production methods which include relatively unrestricted access to natural forage for the majority of the animals' lives*

▸ *Organic Producion:- Production methods, which conform to the legislation of the importing country concerning organic production*

And in 3.5.4 under Feeding Systems:-

▸ *Grainfed: Grain is the predominant component of the diet*

▸ *Forage Fed: Forage is the predominant component of the diet with some grain supplement*

▸ *Exclusively forage fed: Forage is the only component of the diet*

7. RECOMMENDATIONS

7.1   That the Australian beef language adopt UNECE Bovine Language coding where possible to facilitate commercial use and integration with EAN-UCC standard systems. This is regarded as highly relevant for production and feeding system descriptions in addition to other slaughter system and cut related coding.

7.2   That efforts to rationalise auditing, and in particular on farm audits, be aggressively pursued including collaboration with international agencies such as GS1 including the prototype UN blue number initiative.

7.3   That the Australian beef language be made freely available for use within the development of the UNECE international bovine language.

RATIONALE

7.1   The Australian language and related systems are well recognised internationally and potentially have an important role in the development of global standards. The spinoff to the Australian industry is potentially very important.

7.2   The UN Blue number system is integrated with the GS1 system of EAN-UCC codes with any global property essentially being assigned an EAN-UCC unique code. If fully implemented this may provide global transparency and communication between market participants including direct integration with ultimate consumer product identification. A further objective is to assess compliance with a large number of audited value chain systems and to facilitate harmonisation of auditing systems and international standards.

7.3   Uniform global descriptions would assist the Australian industry as a major exporter through increasingly standardised communication.

INDUSTRY BENEFIT

▸ The Australian industry will benefit by further linkage with international standards including the UNECE bovine standard. This is currently extensively based on the AUS-MEAT language with useful additions and full linkage to EAN-UCC coding protocols.

▸ The link to an EAN-UCC code on a product pack provides standardised global description for a number of raising claims, type of kill, refrigeration etc. thus avoiding the need for a plethora of codes and the potential for confusion through duplication.

▸ If the code is universal the need for country-specific codes is reduced together with the need to educate customers. In addition to enhanced understanding and clear communication this may allow significant simplification in production and associated product labelling.

IMPLEMENTATION, TIMEFRAME, CHALLENGES

Full adoption of these recommendations requires both immediate and sustained activity over a long timeframe. As is currently the case, continual interaction with the UNECE and active participation in international forums will be required as consensus and support is needed from the global community. While this is challenging the benefit of trading within an agreed common international language standard justifies the effort required.

APPENDICES

APPENDIX A: BEEF LANGUAGE WHITE PAPER TERMS OF REFERENCE

▸ Available on request at www.mla.com.au/Research-and-development/Search-RD-reports or by phoning MLA on 02 9463 9333.

APPENDIX B: CONSULTATION PAPER AND PROCESS

▸ Working Consultation Paper, available on request at www.mla.com.au/Research-and-development/Search-RD-reports or by phoning MLA on 02 9463 9333.

▸ UNECE STANDARD, Bovine Meat, Carcasses and Cuts Edition 2004
   https://www.unece.org/fileadmin/DAM/trade/agr/standard/meat/e/Bovine_2004_e_Publication.pdf

APPENDIX C: TECHNICAL PAPERS

The following papers provide greater detail on the material presented in this White Paper.

Copies are available on request.

▸ Australian Legislative Framework   ▸ Dairy Industry Language   ▸ Yield and Eating Quality

▸ Legislation and Market Access   ▸ Wheat Industry Language   ▸ Carcase Traits

▸ US Beef Language   ▸ Wool Industry Language   ▸ 'Livestock' Language

▸ EU Beef Language   ▸ The Consumer & 'Meals' Language

▸ Japanese Beef Language   ▸ 'Meat' Language

APPENDIX D: A SUMMARY OF RECOMMENDATIONS WITH INDICATIVE IMPLEMENTATION TIMEFRAMES

For the purposes of this paper, the following definitions of implementation are used. They relate to when a particular recommendation is likely be fully implemented, not when implementation should commence.

▸ Short term (ST) – within the next 5 years

▸ Medium term (MT) – 5 to 10 years from now

▸ Long term (LT) – greater than 10 years from now

AUSTRALIAN BEEF LANGUAGE WHITE PAPER A SUMMARY OF RECOMMENDATIONS WITH INDICATIVE IMPLEMENTATION TIMEFRAMES		
1.1	That the Australian beef language be constructed to provide a whole of chain framework for all necessary trading descriptions to facilitate information transfer at all points from conception to consumption. For operational purposes usage could be predominantly in three sectors: livestock and genetics (livestock language), beef carcase and carcase components including value-added product (meat language) and consumer product descriptions (meal language). To facilitate practical adoption it is further recommended that: 1. Common terminology is prescribed and used wherever possible within each language sector; 2. Individual traits be defined in 'outcome' terms with provision for alternate measurement technologies linked to a common standard; and 3. That an accuracy indicator be reported in association with alternate measurement technologies to facilitate appropriate industry implementation.	ST/ ONGOING
2.1	That the existing *A* cipher for BEEF be changed from *A* to *ANY*.	ST
2.2	That the existing basic category of Bull *B* be transferred from primary category to alternative category. It is recognised that this will be legislatively challenging.	MT
2.3	That the definition of Bull be changed to include any entire male (i.e. those carcases with primary sexual characteristics), other than those described within the existing 'Veal' basic category or castrated males exhibiting secondary sexual characteristics.	ST
2.4	That a new cipher *EQG* be established in the alternate category to identify beef and veal that has been graded through the MSA (EQ) system.	ST
2.4.1	That there be an addition to the Handbook of Australian Meat (HAM) of MSA cooking style descriptions for use in conjunction with *EQG* eligibility without cut specification (for example, beef for stir-fry, beef for roast, beef for slow cooking).	ST
2.4.2	That the MSA EQ matrix be promoted as a primary retail product description.	ST/MT
2.4.3	That optional cattle age verification supported by appropriate audit arrangements be introduced and be considered as an alternative to current dentition categories.	ST
2.5	That all cattle should be eligible for grading through the MSA (EQ) system.	MT
2.6	That the current dentition and days on feed (DOF) eligibility component for grainfed cipher(s) be replaced by a definition requiring despatch from an National Feedlot Accreditation Scheme (NFAS)-accredited feedlot having been fed a high-energy ration for a specified number of days, and be eligible for MSA grading.	ST
2.7	That consideration be given to adopting UNECE production and feeding system description codes to facilitate phasing out the use of 'grassfed' as a generic description for not-grainfed and include a new specified 'exclusively pasture or forage fed' cipher.	ST
2.8	That a standard be established for lean meat yield % (LMY), potentially called Australian Beef Yield (ABY) as a carcase yield based description. An accuracy % should be included in the description, reflecting that alternative technologies may be used to measure this attribute.	MT
2.9	That the proposed *EQG* cipher be available for use on veal carcasses when supported by sufficient eating quality research including evaluation of sex effects.	MT

	AUSTRALIAN BEEF LANGUAGE WHITE PAPER A SUMMARY OF RECOMMENDATIONS WITH INDICATIVE IMPLEMENTATION TIMEFRAMES	
3.1	That industry continues to develop standards for generic definitions that will underpin principal 'raising' or 'provenance' claims used by brands. Individual brands will be the responsibility of the brand owner. These standards should be developed by industry and held by AUS-MEAT. The cost of defending these standards in any raising claims dispute should be the responsibility of the brand owner.	ST/ ONGOING
3.2	That a suitable mechanism be developed for use in conjunction with principal raising and provenance claims that comply with agreed national (and where applicable global standards) to enable clear distinction between these and alternative individual programs.	ST
3.3	That industry developed standards focus on high-level, well differentiated raising and provenance claims to provide clear national definitions and endorsement in conjunction with the legislative structure for welfare and animal health standards. Industry should not seek to develop standards for minor variations which should be the provenance of individual brand owners (e.g. a definition of 'eco-friendly').	ONGOING
3.4	That efforts to rationalise auditing of industry and purchaser standards, and in particular on-farm audits, be aggressively pursued.	ST
4.1	That an expert group review the Bovine Livestock Language with the aim of creating a section within the existing language standardising terminology and ensuring common description across all trading and production categories including registered and commercial cattle sold by live export or as domestic store or finished cattle. This review will standardise the language used by all parties so that carcase and chiller assessment data can be linked to genetic evaluation programs.	ST
4.2	That this new language be aligned with the AUS-MEAT carcase language through the use of common terminologies between live animal and carcase description to facilitate clear communication.	ST
4.3	That standard muscle and fat scores be utilised in live cattle and carcase description with this description replacing condition score for live animal and the use of butt shape, P8 fat and rib fat in carcase yield description. Addition of a 0 fat score reflecting emaciated cattle at welfare risk is recommended for inclusion in the muscle and fat score system.	ST
4.4	That the frame score calculation of the live animal be standardised, particularly in the light of new automated technologies to facilitate useful type description and relationship to possible final outcomes.	MT
4.5	That efforts be made to achieve common description of dairy and beef cattle where they are utilised as meat.	ST
4.6	That an optional animal age description of day of birth/month of birth/season of birth (dd/mm/yyyy, --/mm/yyyy or Jan-June/yyyy) be established and be the sole official indicator of animal age where this is specified. These alternative age declarations should utilise an NLIS field to facilitate download at transaction points and inclusion in databases. It is further recommended that dentition and ossification measures be reported as such and not promoted or published as having any age relationship.	ST

AUSTRALIAN BEEF LANGUAGE WHITE PAPER A SUMMARY OF RECOMMENDATIONS WITH INDICATIVE IMPLEMENTATION TIMEFRAMES		
5.1	That, wherever possible, the language should describe a common outcome (or trait description) able to be produced from alternative technologies where applicable. The trait measure needs to be auditable and where appropriate reported with an accuracy description.	ST
5.2	That accurate objective measurement for live animal, carcase and cut descriptions be actively pursued and incorporated into language when cost effective under commercial conditions.	MT
5.3	That the measurement of inputs to key underpinning industry systems be continually monitored on an industry-wide basis and strengthened as appropriate to ensure the integrity of these systems. In the immediate timeframe measures and methodologies should be adopted to monitor and ensure repeatability and accuracy of subjective grading traits.	ST
5.4	That the current QA-based integrity system be strengthened in the immediate future with emphasis on points of ownership transfer. It is critical in this regard that accuracy and integrity be and be seen to be effective. The storage of relevant data, especially at the point of ownership transferral would be useful for any subsequent dispute resolution.	ST
5.5	That carcase muscling and fatness be described by independent muscle and fat scores (based on a similar principle to the EUROP 15 point scale format).	MT
5.6	That a single marbling standard be adopted utilising the MSA standards with optional reporting in rounded 100's. Such a standard must cover the full range of Australian cattle for this characteristic and may require additional standards beyond 1100.	ST
5.7	That, subject to R&D validation, a standard for marbling fineness be defined and introduced into the grading system where appropriate. This standard should not be breed specific.	ST
5.8	That the existing AUS-MEAT meat colour chips for both beef and veal be re numbered in steps of 100 to provide a linear progression and potential subdivision in units of 10 supported and ultimately replaced by objective measurement.	ST
5.9	That MSA grading data be monitored statistically to identify possible variation in grading results and enable early action to monitor and re-train graders where appropriate.	ST/ ONGOING
5.10	That further R&D be prioritised to objectively relate existing carcase colour measures to actual consumer appeal and pH.	ST
5.11	That the OSCAP grading system and internal pass standards be reviewed to assist in improved consistency.	ST
5.12	That R&D continues to identify improved objective measurement technologies that can increase the precision of predicting outcomes. This applies to technologies to measure fat and muscle in the live animal and carcase, along with tissue distribution within the carcase and intramuscular fat content. This will require continued substantial industry R&D investment.	MT/ ONGOING
5.13	That industry education and communication issues be addressed as a priority to increase the level of understanding and co-operation between sectors.	ST

	AUSTRALIAN BEEF LANGUAGE WHITE PAPER A SUMMARY OF RECOMMENDATIONS WITH INDICATIVE IMPLEMENTATION TIMEFRAMES	
6.1	That attention be directed to facilitating electronic data interchange between multiple industry databases with linkage via the NLIS ID as a common key. This will require an approval process by individual owners to authorize release of data from a potentially large number of databases at multiple access points and the use of freely shared data to derive maximum benefit. Standard data sharing protocols will be required together with procedures for accommodating new data fields and technology over time.	MT/ ONGOING
6.2	As noted in section 5, the storage of relevant data, especially at the point of ownership transfer would be useful for any subsequent dispute resolution.	ST
6.3	Again the recommendation to specify standard output descriptions able to be produced from multiple systems with associated accuracy indicators is reinforced.	ST
6.4	The ability to "attach" individual animal records to mob based NVD declarations is supported as a desirable protocol for all future transaction systems.	ST/ ONGOING
6.5	The question of PIC numbers relating to properties versus individual livestock owners should be examined within long term potential requirements for national and international data linkage and the similar but potentially different need to trace the 'person in charge of livestock' or source property.	ST
6.6	The potential to interact at individual property or producer level with the United Nations blue number system should be evaluated. This identification system seeks to provide a global network for producer to retail information transfer together with automated assessment of farm practice and eligibility in relation to a plethora of private and government programs.	MT
7.1	That the Australian beef language adopt UNECE Bovine Language coding where possible to facilitate commercial use and integration with EAN-UCC standard systems. This is regarded as highly relevant for production and feeding system descriptions in addition to other slaughter system and cut related coding.	ST
7.2	That efforts to rationalise auditing, and in particular on farm audits, be aggressively pursued including collaboration with international agencies such as GS1 including the prototype UN blue number initiative.	ONGOING
7.3	That the Australian beef language be made freely available for use within the development of the UNECE international bovine language.	ST

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INFORMATION

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