# Terms of Reference

**Title of project** **Beef and Lamb offal survey for improving market access**

**Project number** **j12911**

AMPC and MLA have established a joint approach to portfolio development and project contracting, management and adoption in the area of food safety which will ensure that the strategic priorities of each sector (producer and processor) can be addressed in an efficient manner while avoiding duplication of effort and resources.

## Background

Edible offal contributes about 7% of the total revenue available from the all products derived from cattle and sheep slaughtered for human consumption. All meat processors recover offal items for human consumption but the range of offal recovered and recovery rates for offal items vary between establishments. Most offal is exported frozen with a shelf-life of about 12 months. There is also export of chilled offal both by air freight and sea freight. About 4% of exports of both beef and sheep offal are in chilled form. The demand for chilled beef offal is mainly in Japan and applies to tongue and thick and thin skirt from grain-fed cattle[1].

A wide range of treatments is used to prepare offal. Some offals are packed with very little treatment or trimming e.g. heart, liver, kidney, while others require more extensive trimming or labour to remove them from the carcase e.g. tongue, thick and thin skirt, cheek meat, tendons. Intestinal offals including tripe, rumen pillar, honeycomb, omasum, abomasum, large intestine, small intestine require extensive trimming and treatment to prepare them for sale. All edible offal must comply with chilling (refrigeration index) criteria. To achieve this some offal, particularly liver and heart may be pre-cooled in water or ice before they are packed. Vacuum-packed chilled offal may be pre-chilled to improve presentation in the vacuum pack.

In recent times offals have been a focus for several export markets especially to countries such as China and Vietnam, mainly for tripe. In 2016 China's AQSIQ conducted a review of Australia's production system for tripe and other offal. AQSIQ advised that Australia had a well-managed system for offal production but noted that there was no mandatory requirement for microbiological monitoring in offal. For Vietnam white offal trade was re-established in 2015 after a six year ban on the product. However, no plants currently have listing, but there are up to 20 establishments that are interested in gaining access.For Australia to maintain or open new market access opportunities the hygienic quality of offals, as usually supplied to these markets, needs to be documented. Information on hygienic quality could be sufficient for accessing the market, avoiding the need for lot by lot testing, or setting manageable criteria for future testing and trade.

[1] Australian Beef and Sheepmeat edible offal market review 2012

While some export establishments already collect offal data, the data are limited making it hard for any comparable data analysis. A small survey of some offals (head/cheek, lips, heart, neck, tail) was conducted in 2007/8[2]

## Issues to be addressed

The key objectives of the project are:

- Estimate the prevalence and quantitative levels of indicator organisms in offals
- Estimate the prevalence of pathogens of concern to key markets

Consider within and between establishment variations in hygienic quality to suggest whether results are consistent within and between establishments, and therefore whether efforts are required to better define and standardise procedures for offal recovery.

Including an appropriate range of offals from a broad range of establishments is critical to market access for those offals and establishments. An analysis has already been conducted to design the survey taking these factors into account. The results of these considerations are presented in Appendix 1 to these Terms of Reference.

All work in the project needs to be conducted to a very high standard and meet the requirements of stakeholders, including government and the red meat industry. Involvement in future communication of results may be required.

## Project Methodology

Proposals will be considered to either manage the project, conduct the laboratory analysis, or both, according to the responsibilities outlined below. However, alternate proposals will be considered, and negotiated with the successful tenderer.

The favoured approach is to appoint a manager who will be able to oversee all aspects of the project and who has developed a package of services covering a significant portion of the services that will be required to conduct the project. Organisations or consortia which may wish to offer a significant portion of the services, but without offering project management, should also consider applying. Laboratories undertaking testing of offal samples must be approved by DWAR

A. Responsibilities of Laboratories

    1. Receive samples, record arrival temperatures and store samples prior to testing.
    2. Test samples promptly on arrival according to agreements with the Project Manager.
    3. Test samples according to methods agreed with the Project Manager.
    4. Report results in the form requested by the Project Manager.
    5. Report any factor that may unduly influence test results to the Project Manager.

B. Responsibilities of the Project Manager

    1. MLA/AMPC will appoint a manager to be responsible for all aspects of conducting the project. The manager may also offer other services relevant to the project, or other organisations may be contracted to conduct, testing.

[2] https://www.mla.com.au/research-and-development/search-rd-reports/final-report-details/Product-Integrity/E-coli-in-raw-ground-beef-components/2354

2. Sampling and laboratory analysis
    1. Work with MLA/AMPC to:
        i. Obtain agreement of establishments to conduct sampling (in conjunction with Australian Meat Industry Council).
        ii. Provide instructions for submission of samples to laboratories.
        iii. Provide detailed instructions on methods of sampling, transport and analysis.
    2. Arrange and manage sample collection to be tested, including:
        i. Determining the types of samples and dates of sampling
        ii. Transport to the laboratory
    3. Arrange and manage tests performed on each sample.
    4. Work closely with laboratories to ensure that
        i. Laboratory workloads are managed
        ii. testing is performed according to requirements
        iii. results are reported according to requriements
    5. Prepare spreadsheets containing laboratory data for further analysis, perform data accuracy checking, and descriptive data analysis.
    6. Refer any matter to MLA/AMPC that may compromise the conduct of the sampling and analysis, the quality of the analytical data or compliance with the survey design.
3. Coordination of statistical analysis and reporting
        i. Work with MLA/AMPC and the statistical analyst to analyse the collected data according to the survey design.
        ii. Prepare detailed reports for MLA/AMPC.
        iii. Prepare draft reports for publication.

Detailed specification of methods is given in Appendix 1. The Project Manager and Laboratory will be responsible for developing detailed methods, instructions, documentation and reports based on the specification of methods.

## Project Timing

The project should commence as soon as possible once a contract is agreed. The length of the project should be reasonably short (few months), consistent with the operational needs of processors and the need to collect samples from each processor on a number of occasions.

## Services Required

- Developing a comprehensive project plan which includes a detailed methodology and budget and describes the cash and in-kind contributions to the project
- Disseminating key findings from the research to the wider scientific community in a variety of formats subject to approval by MLA/AMPC

- Preparing progress reports against milestones that detail findings from individual experiments. The milestones are to be agreed during the contracting phase of the project. Milestone delivery is a critical metric.
- Preparing a comprehensive final report detailing the project (methodology, data, analysis & conclusions).
- Preparing communication materials such as scientific papers, conference presentations, information brochures, snapshots, processor talks and trade articles as approved by MLA.

## Confidentiality & IP

Access to personnel and information will be provided subject to the contractor undertaking to keep information gained as a result of the work confidential between the contractor and MLA/AMPC. Intellectual property developed as a result of the consultancy will remain the property of MLA/AMPC. The contractor will be required to enter into a standard contract for services with MLA/AMPC.

## Payment of Fees

The proposal should indicate the basis for charging, whether time and materials or a fixed fee. The proposal should detail the charges for different aspects of the project. Some aspects of the project could be considered as expenses, and charged to MLA/AMPC at cost.

Payment of fees will be upon MLA/AMPC acceptance of the attainment of the milestones. Progress payments may be negotiated against project milestones if the size and timescale of the project warrants this. The proposal should indicate these milestones and payments if required.

A substantial proportion of the fees will be contingent on delivery of an acceptable final report.

## Further Information

If you have questions regarding this project contact:
Long Huynh
Research, Development and Innovation
Meat & Livestock Australia Limited
Phone: (02) 9463 9164
Email: Lhuynh@mla.com.au

## Application and Closing date

Providers should respond to the "Joint Food Safety Research Proposal Form" provided. The successful applicant will be contacted.

Applications must be received via electronic copy by 22/12/2017 **COB** (Sydney time)

The address for delivery is:
Long Huynh
Email: lhuynh@mla.com.au
**Only electronic submissions will be accepted.**

## Appendix 1: Methods

### 1.1 Species, offal types and sample numbers

Sample numbers per establishment slaughtering each class of stock (based on assumed number of participating establishments in the second last line of the table).

| Offal | Sub-Class | Beef | Sheep | Lamb | Goats |
|---|---|---|---|---|---|
| RGBC* | | (20) | | | |
| | Cheek | 7 | 0 | 0 | 0 |
| | Head Meat | 3 | 0 | 0 | 5 |
| | Heart | 7 | 0 | 0 | 0 |
| | Weasand meat | 3 | 0 | 0 | 0 |
| Red Offal | Kidney | 0 | 0 | 15 | 5 |
| | Skirt | 8 | 0 | 0 | 0 |
| | Liver | 4 | 0 | 0 | 0 |
| Tongue | | 11 | 0 | 0 | 0 |
| Tripe | Scalded/bleached | 19 | 30 | 30 | 10 |
| Other | Tail | 4 | 0 | 0 | 0 |
| | Tendons | 3 | 0 | 0 | 0 |
| | Testes | 0 | 0 | 0 | 5 |
| **Total per establishment** | | **69** | **30** | **45** | **25** |
| No. of Est | | 15 | 7 | 9 | 5 |
| **Total Samples** | | **1029** | **210** | **405** | **125** |

* RGBC samples need to be collected from lots not destined for the USA, if STEC testing is to be performed

### 1.2 Participating establishments

Participation in the survey would be voluntary, and results would be confidential to each participant; only consolidated or deidentified establishment data would be reported. In recent surveys it has been AMIC policy to include the names of participating establishments in the report, as a way of acknowledgeing the contribution they have made, and because the report may have some value in establishing their credentials in audit etc. Participating establishments are provided with a report of their own results

Through consultation with AMIC/AMPC 18 establishments has volunterred to participate so far.

### 1.3 Sampling methods

- Ideally sampling should be carried out by personnel independent of the establishment. Where this is not possible sampling may be carried out by plant staff; however, such sampling should be under the supervision of DAWR or other independent observer. Discussions with DAWR about participation in the survey will be negotiated by MLA/AMPC and AMIC.

- Samples can be collected from frozen or fresh product
    - Collecting samples from frozen product has the benefits that samples can be batched over several days and that such samples represent the majority of exported product. Sampling frozen product however can be time consuming for the person conducting the sampling.
    - Collecting samples from fresh offal has the advantage of being quicker for the person collecting the sample (i.e. throw whole offals into a carton and sent to the lab); however transport and lab costs may be higher. Fresh samples also do not account for possible changes in bacterial numbers due to slow freezing.
    - Once a decision has been made on the type of sample i.e. fresh or frozen, all samples should be taken at this stage in the process i.e. cannot mix fresh and frozen.
- The Project Manager will specify the number of samples to be collected on each collection day.
- Sampling.
    - All samples should be collected randomly from production on the day specified by the project manager. Production may refer to offals being processed on the day, just before packing, in the case of fresh product, and product being removed from the freezer in the case of frozen product.
    - Frozen
        - A minimum of 50 g of sample should be collected from the surface of frozen cartons except in the case of RGBC products sampled at beef establishments where a minimum of 400g must be collected from the surface of each carton selected for sampling.
    - Fresh
        - An individual piece (weighing at least 50g or 400g in the case of RGBC) of each offal type to be sampled should be placed in a separate bag in a carton.
    - RGBC samples should be collected using the same protocols as outlined in DAWR MN 2010/03 (or the *Microbiological Manual for Sampling and Testing of Export Meat and Meat Products*, if this has replaced by Meat Notice) relating to *E. coli* O157 testing of RGBC.
    - All samples should be individually bagged and labelled with the date collected, the Establishment number, the offal type sampled, and HAM number. RGBC samples should be labelled RGBC as well as the individual offal class sampled i.e. cheek meat, weasand meat etc.
- Samples collected frozen should be kept frozen until dispatched to the testing laboratory. This may allow batching of samples (i.e. weekly).
- Fresh samples or samples that have thawed during sampling must not be frozen.

### 1.4 Transport methods

- All samples must be shipped refrigerated (≤ 7°C) by overnight courier to the testing laboratory such that the sample arrives at the testing laboratory no later than on the day after the samples were collected (or dispatched in the case of frozen samples).
- Fresh samples or samples that have thawed during transport must not be frozen.

### 1.5 Testing

#### 1.5.1 Tests for each sample

RGBC APC, E. coli / coliform, *Salmonella*, STEC

Other APC, E. coli / coliforms, Coagulase positive staphylococci, *Clostridium perfringens*

#### 1.5.2 Methods

- Samples must be analysed at a DAWR approved laboratory using the following methods.
    - APC AOAC 990.12 (Petrifilm)
    - *E. coli*/coliform AOAC 991.14 or AOAC 998.08 (Petrifilm)
    - *Salmonella* FSIS MLG 4C (BAX)
    - STEC FSIS MLG 5A and 5B (BAX)
    - Coagulase positive staphylococci
    - *Clostridium perfringens*

  Note that analysis for *Salmonella* and STEC is only required for RGBC collected from beef establishments.

The following requirements should be met;

- Recording of the sample (batch) temperature on arrival at the laboratory.
- Product should be held frozen, or refrigerated at 0-4°C on arrival at the laboratory
- Frozen samples should be thawed in the laboratory at 18- 27°C for up to 3 hours before commencing the test (Australian Standard AS 5013.11.2-2006). Samples may thaw during transport – this is acceptable.
- Testing should commence no later than on the day following sample arrival at the laboratory below 4°C.
- APC and *E. coli*/coliform samples should consist of a minimum of 25g of sample homogenised in 9x the weight (1/10, referred to here as the -1 dilution) of peptone salt solution (or similar approved diluent).
    - Sufficient dilutions should be prepared to ensure that a count is obtained for every sample.
    - For *E. coli*/coliform counts 1ml of the initial dilution may be sufficient to ensure that a count is obtained on all samples. However, it is recommended that the 1/100 (or -2 dilution) dilution is also plated until the lab has an idea of what the range of counts might be on offal
    - For APC it is recommended that -1, -2, -3 and -4 dilutions are plated initially. This will allow counts up to $1x10^6$ CFU/g to be estimated. Single Petrifilm plates may be used for each dilution (in this case the lab should consider using a minimum of two plates to calculate the count).
    - Counts outside the countable range on Petrifilm must be estimated where possible i.e. avoid reporting TNTC results
- RGBC samples should be analysed for APC and *E. coli*/coliforms as outlined above as well as for *Salmonella* using the FSIS MLG BAX protocol using a 375g sample. The laboratory should abide by all *Salmonella* reporting requirements for health authorities in their state. Where possible *Salmonella* isolates should be forwarded to a reference laboratory for typing.