

# milestone report

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Prepared by: Suvir Salins, François Tabbakh, Patrick Youil  
Retail Ready Operations Australia Pty. Ltd.

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## **Coles RROA Insights and Innovation Manager: High Value Meats Strategy**

### **Milestone 12 – Final report**

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## Abstract

Coles RROA and MLA Donor Company (MDC) have agreed to progress a Collaborative (Value-adding) Co-innovation Program over a three-year period commencing in March 2018. The program is designed to support the development and implementation of Coles RROA's red meat high value growth strategies in both the domestic and global markets to be achieved via a range of innovative products, packaging, processes and new business model concepts. The specific focus of the program will be on insights and design led innovation approaches to New Product Development (NPD) and Process Improvement - in particular, to drive High Value beef exports. It is noted that in addition to the development of new high value products to meet customer demand, the program may also extend more broadly into the Coles RROA's business activities where opportunities to innovate red meat markets are identified.

The Collaborative Value-adding Co-Innovation Program will be overseen by a joint Coles / RROA / MLA Steering Group and implementation will be managed by a team comprised of RROA, MLA and external resources as required. This project provides support for a full-time (i.e 1 FTE) RROA Co-Innovation Manager for an initial period of three years with an option to extend to a second three-year term based on overall progress of the program and projects. As the program strategy evolves it is anticipated that specific R&D projects will be developed, and additional resources to support these projects will be considered as required. Each individual R&D project will be contracted via a separate schedule to be attached to the Collaborative Head Agreement.

Overall, in Milestone 12, Coles RROA continued to make significant progress in the development of the co-innovation strategy aligned to their overall business strategy. The collaborative RROA- MLA strategy and priorities was further refined awaiting steering group approval.

This milestone report will present an overview of advancement and act as a final report to MLA, specifically:

- Continued appointment of internal and external engineering resources to support the innovation program and projects generated
- Assignment of Coles RROA resources to specific innovation initiatives
- Exploration of new innovation ideas, feasibility assessments, and partnerships
- Evaluated new technologies with providers, including Frontmatec, Rapiscan, Lumachain, and Cobotic manufacturer(s)
- Developed and submitted a new project proposing the evaluation of a novel technology for ambient pathogen reduction
- Progress on existing innovation projects

Coles RROA are reviewing some new project concepts (as part of the RROA co-innovation program, Stage 2), some of which are potentially transferable to their newly acquired Coles meals solution business (Chef Fresh, located at Botany, also with a smaller existing operation in Melbourne).

Here's a summary of some of the new project concepts, for stage 2, that were discussed (subject to further input from RROA, Coles & MLA's Program Managers):

- Co-botics solutions in red meat processing applications [Initially Phase 1 is proposed with a specific focus on packaging and handling product with pilot demonstrations scheduled at RROA as part of the current project (P.PSH.2015) that is now approved by MLA and ready for RROA signing]
- AI & sensing applications (for automated tasks, product verification, detection of contaminants, traceability / authenticity, etc)
- Materials handling and (potentially automated) load out solutions
- Labels & products verification
- Manual assist for specific (tedious) operator / processing tasks
- Integrity systems (including Lumachain and/or other integrity systems' providers with similar solutions) with potential applications (to be validated depending on the problem RROA is looking to solve):
  - Automated processing room traceability

- Verification of batches and /or specific cuts and / or product type
- Capturing & linking processing data to specific products & origins (raw materials)
- Processing room efficiencies and product flows
- Tracking cuts/products to specific batches/orders and automating the paper trail and documentation to reduce human error and delays
- etc
- .....and many more

In addition to the project concepts that have been discussed, there may also be an opportunity to leverage off existing MLA activities with outcomes relevant to your operation(s), including:

- Priorities driven by insights & trends
- Creating value through data [building on the RROA Digital strategy & co-funded role (P.PSH.1160)]
- New markets including export & domestic, new customers and new channels to markets:
  - Delivery services models (“Last Mile Channels”) with current engagements with Australia Post, Amazon, eBay, etc.
  - Aged care meal solutions including red meat & delivery business models eg Aged Care 2025+ vision
  - Meal kit business models
  - Test beds for new concepts & new product development – eg Behind the Glass concept, stadium meal solutions, vending machines, etc
  - Centralised “Dark Kitchen” concept, whereby the proposition is to create centralised kitchen operation(s) that (upper high-end premium food service and restaurant) businesses can access & contract to replicate their menus including red meat as centre of plate
- AI / VR to speak to your customer on red meat meal solutions
- (Automated) Verification of product / batches / orders through data / digital
- MLA is currently finalising its automated materials handling & loadout strategy and having the opportunity to work collaboratively to include Coles’ processing operations priorities
- New products & innovative (sustainable) packaging solutions – and potentially leveraging off MLA’s high value foods program & initiatives

Considering the breadth and depth of ideas potentially transferable to Coles’ new meals solution operation, it may be possible that in addition to the RROA/MLA co-innovation that we consider wrapping these up under a concurrent Chef Fresh-MLA co-innovation program.

It is proposed to finalise stage 1 (Milestone 12) - Collaborative Innovation Program development and implementation and make recommendations for a possible stage 2 engagement.

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# 1 Milestone Description

## 1.1 Milestone 12

Collaborative Innovation Program Final Report.

Submit Final Commercial and in confidence report to the MLA along with this public report, for review and approval which should include recommendations for a possible stage 2, third party review of findings, impacts and outcomes from the program. Lessons learnt on innovation approaches, growth opportunities, successes, failures and surprises to be included in the public final report for industry release.

In Milestone 12, Coles RROA has summarised the significant progress in the development of the co-innovation strategy, detailed the lessons learnt and made recommendations for possible stage 2 opportunities in the future.

# 2 Background

## 2.1 Project purpose & scope

Coles RROA and Meat & Livestock Australia have agreed to progress a Collaborative (Value-adding) Co-innovation Program over a three year period commencing in January 2018. The program is designed to support the development and implementation of Coles RROA's red meat high value growth strategies in both the domestic and global markets to be achieved via a range of innovative products, packaging, processes and new business model concepts. The specific focus of the program will be on insights and design led innovation approaches to New Product Development (NPD) and in particular High Value beef exports. It is noted that in addition to the development of new high value products to meet customer demand, the program may also extend more broadly into the Coles RROA's business activities where opportunities to innovate red meat markets are identified.

A range of new product and business growth activities have been conducted during the three-year period which include but are not limited to the following:

- Market and insights intelligence and analysis in targeted high value markets
- Implementation of design-led approaches for New Product Development (NPD)
- Scanning exercises of new innovative product, packaging, technology and processes and business model designs
- Trade shows and industry events to evaluate new innovative products
- Capture, collate and analyse consumer and market trend data to provide insights to new products and packaging to meet customer demand
- Insight and innovation capability and skill development
- Product evaluations and testing
- Study tours of key international and domestic retail and food service markets of innovative products, processes, technologies and packaging
- Facilitated workshops on technologies, processes and packaging involving suppliers and technical experts

The Collaborative Value-adding Co-Innovation Program has been overseen by a joint Coles RROA / MLA Steering Group and implemented by a team comprised of Coles RROA, MLA and external resources as was required.

This project provided support for a full-time (i.e. 1 FTE) Coles RROA Product Innovation Manager for an initial period of three years with an option to extend to a second three-year term based on overall progress of the program and projects. As the program strategy evolved, specific R&D projects were developed, and additional resources to support these projects were considered as required. Each individual R&D project was contracted via a separate schedule and attached to the Collaborative Head Agreement.

## 2.2 Product Innovation Manager - Roles & responsibilities

The major activities undertaken by the RROA's Co-Innovation Manager included (See Appendix 2, Section 8.2):

Ongoing support for this role by MLA contingent upon:

- There is clear evidence that the role is a dedicated full-time RROA Co-Innovation Manager role working on a suite of agreed R&D projects focused on achieving growth of the high value Australian red meat segment in both domestic and emerging export markets.
- All reporting and milestone management requirements are met on-time.
- The joint RROA / MLA Steering Group is satisfied with progress and agrees to continue the program at each of the go/no go decision points.

The RROA Co-Innovation Manager satisfactorily undertakes the full range of activities as described above (or as varied and agreed by RROA and MLA). The contribution of the RROA's Innovation Manager to the overall success of the Innovation Strategy will be determined by:

- Evidence of effective implementation of RROA's red meat high value growth strategies in both the domestic and global markets to be achieved via a range of innovative products, packaging, processes and value chain concepts
- Evidence of improvement in company innovation culture and capability
- Quantifiable improvements in company innovation measures (as agreed)
- Efficient project delivery in accordance with budgets and timelines
- Quality of reports
- Contribution to Insights to Innovation events and network meetings

The Collaborative Value-adding Co-Innovation Program was overseen by a joint Coles RROA / MLA Steering Group and implemented and managed by a team comprised of Coles / RROA, MLA and external resources as was required. This project provides support for a full-time (i.e. 1 FTE) RROA Co-Innovation Manager for an initial period of three years with an option to extend to a second three-year term based on overall progress of the program and projects. As the program strategy evolved specific R&D projects were developed, and additional resources to support these projects were considered as required. Each individual R&D project was contracted via a separate schedule and attached to the Collaborative Head Agreement.

## 2.3 Resource Allocation

### 2.3.1 Internal

Coles RROA assigned internal resources from its Engineering, Supply Chain, Production and Quality Assurance departments to take active roles and participate in the innovation program. Innovation initiatives were promoted across all departments and members are encouraged to share input, when deemed viable, members were given time and resources to further develop their ideas by performing the required research, preliminary trials or other activities required to prepare a business case.

### 2.3.2 External

A contract agreement was made with a local engineering firm to provide engineering and project management resources to support the innovation initiatives and drive these from insight through to implementation.

This role involved supporting the Coles RROA teams in all aspects of the development of projects from preliminary trials and feasibility studies to CAPEX requests and then detailed engineering design, construction and start-up.

### 3 Success in meeting the milestone

Milestone 12 has been successfully achieved by submitting a Final Commercial and in confidence Report including recommendations for a possible stage 2, third party review of findings, impacts and outcomes from the program. Lessons learnt on innovation approaches, growth opportunities, successes, failures and surprises to be included in the public final report for industry release is this report, uploaded onto MLA’s website.

In Milestone 12, Coles RROA has summarised the significant progress in the development of the co-innovation strategy, detailed the lessons learnt and made recommendations for possible stage 2 opportunities in the future.

Milestones 1-12 have been successfully achieved by completion of :

- Contract execution – ACHIEVED
- Finalise position description, commence recruitment (Interim Co-Innovation Manager appointed) – ACHIEVED
- Form RROA / MLA steering committee consisting of Coles / RROA & MLA representation – ACHIEVED; and
- Commenced setting overarching goals, metrics and outline in the form of a draft Collaborative innovation strategy & key priorities – ACHIEVED
- Develop strategic portfolio of growth opportunities in “value add/insights” theme – ACHIEVED
- Manage collaborative R&D projects in this theme – ACHIEVED
- Review and provide input into new R&D proposals – ACHIEVED
- Track and report on quantifiable benefits of Coles RROA projects – ACHIEVED
- Participate in internal and external networks to accelerate outcomes – ACHIEVED
- Action steering committee tasks – ACHIEVED
- Submitted Quarterly Reports including details of study tours, development of new innovative products, packaging and processes, skills development, participation in innovation networks and a program review by Coles RROA and the MLA.
- Submitted Final Commercial and in confidence Report including recommendations for a possible stage 2, third party review of findings, impacts and outcomes from the program. Lessons learnt on innovation approaches, growth opportunities, successes, failures and surprises to be included in the public final report for industry release.

#### 3.1 Finalise position description

- Finalise position description – ACHIEVED.

#### 3.2 Commence recruitment

- Recruitment of the Product Innovation Manager (Interim Co-Innovation Manager assigned) - ACHIEVED.

#### 3.3 Form Company / MLA steering committee

- Company / MLA steering committee formed consisting of Coles / RROA & MLA representatives - ACHIEVED.

#### 3.4 Set overarching goals, metrics and outline

- Set overarching goals, metrics and outline (to be presented to the Project steering group for input and signoff) with consideration of data availability, metrics and resource planning for innovation portfolio – Partially ACHIEVED



- The overarching goals for this role will be to ensure complete alignment with the Coles growth strategy to fast track innovative ideas from concept to market. The goal of increasing red meat consumption both locally and introducing fresh retail ready meat offerings to new export markets into PRC and ASEAN countries to grow red meat sales by at least 10% by 2023.
- The metrics will be linked to the three year Coles meat strategy which encompasses both local and export market opportunities. This role will crystallise this strategy and link supporting co-funded projects to deliver the red meat growth agenda for Coles supermarkets around innovation in packaging, quality, and cost improvements See Appendix 1 in Section 8.1).
- The three year plan detailed in Appendix 2 (See Section 8.2) will be further enhanced over coming months to extend coverage across a five-year horizon, with defined projects and initiatives that will deliver innovation, drive down costs and improve shelf-life and presence of Coles red meat products with a primarily export growth focus.

### 3.5 Systems & processes

- Systems & processes for R&D portfolio management – partially ACHIEVED & ongoing
  - Interim Co-Innovation Manager commenced the development of a framework and processes for implementation of Co-Innovation strategies & R&D projects portfolio.
  - Preliminary list of target R&D applications underway. A spreadsheet capturing all R&D has been drafted and used to capture all R&D project concepts.
  - Update RROA's project spreadsheet with past, current & pipeline projects to include product innovation projects.
  - Providing input into the Draft RROA – MLA Collaborative Strategy page & priorities to present to the project steering group for signoff.
  - Key dates & events including tradeshow, courses & industry / innovation events. Looking to setup & track through IT site.
- Ongoing refining Coles RROA-MLA Collaborative Strategy (Appendix 2, section 8.2.2).
- Project concepts under development.
- Ongoing project review and strategy sessions with RROA R&D team.
- Events planner
- Learning & Development plan (for Co-innovation manager)

### 3.6 Overall progress review (Steering Committee reviews)

Overall, in Milestone 12, Coles RROA continued to make significant progress in the development of co-innovation strategy aligned to the overall business strategy. Steering group consisting of Coles / RROA and MLA had been formed. The collaborative RROA- MLA strategy and priorities were further refined awaiting steering group approval. At the conclusion of Milestone 3, 5 and 8 were critical Go/No Go decision points. The Go/No Go review meetings were conducted as part of the routine project update meetings where all outcomes of the project to date were presented and reviewed. The outcome of the review meetings was that the steering group approved continuation of the program through Milestones 9 to 12 including the next 12 month's priorities. Milestone 12 will detail the final developments of each strategy in the following sections.

## 4 Innovation Advancements in the Identified Priority Areas

To contribute to increased red meat consumption across local and export markets. The Coles RROA red meat strategy targeting four focus areas (Appendix 2) has been updated to reflect new insights and objectives, aligned with Coles core values. The following sections present an outline and progress update on innovation initiatives, new ideas, and ongoing projects within these areas.

## 4.1 Efficiency

### 4.1.1 Evaluation of Advanced Vision Guided Robot Technology Systems (P.PSH.2051)

Intelligent vision systems combined with robot automation technologies are being evaluated to reduce labour requirements (head count), increase productivity, reduce RMI risks and improve quality of various manual operations. The evaluation of automation opportunities has led to the identification of a number of potential applications for collaborative robots (cobotics) at Coles RROA. These include pick and place, packing, and quality inspections tasks.

Coles RROA automation engineering SME are comparing inhouse developed solutions and commercially available robotic gripper and vision technology systems for the identified applications. It is proposed to evaluate collaborative robot(s) with concept grippers for various red meat picking and packing applications (See photo 1).



**Photo 1:** Collaborative robot & grippers proposed for picking and placing raw red meat cuts and packaged product.

The project will explore and develop knowledge on this technology through research, networking, and practical applications. Market industry research will be conducted on available technologies and existing manufacturing case studies. Further than the technology itself, application knowhow is expected to be key in successful implementation. Participation in seminars and networking will be used to assess best industry practice. Focus areas will include:

- Machine safety
- Criteria for best applications
- Gripper technology
- Programming
- Adaptability to food production environments
- Integration within human workforce

Following the initial research phase, equipment will be sourced for use in practical applications for the RROA team to gain hands on experience with the technology and all aspects of its implementation. Initial trials will target simple applications to gain a deeper understanding of the technology's capabilities and limitations to then develop a general methodology or framework for adaptation in future applications.

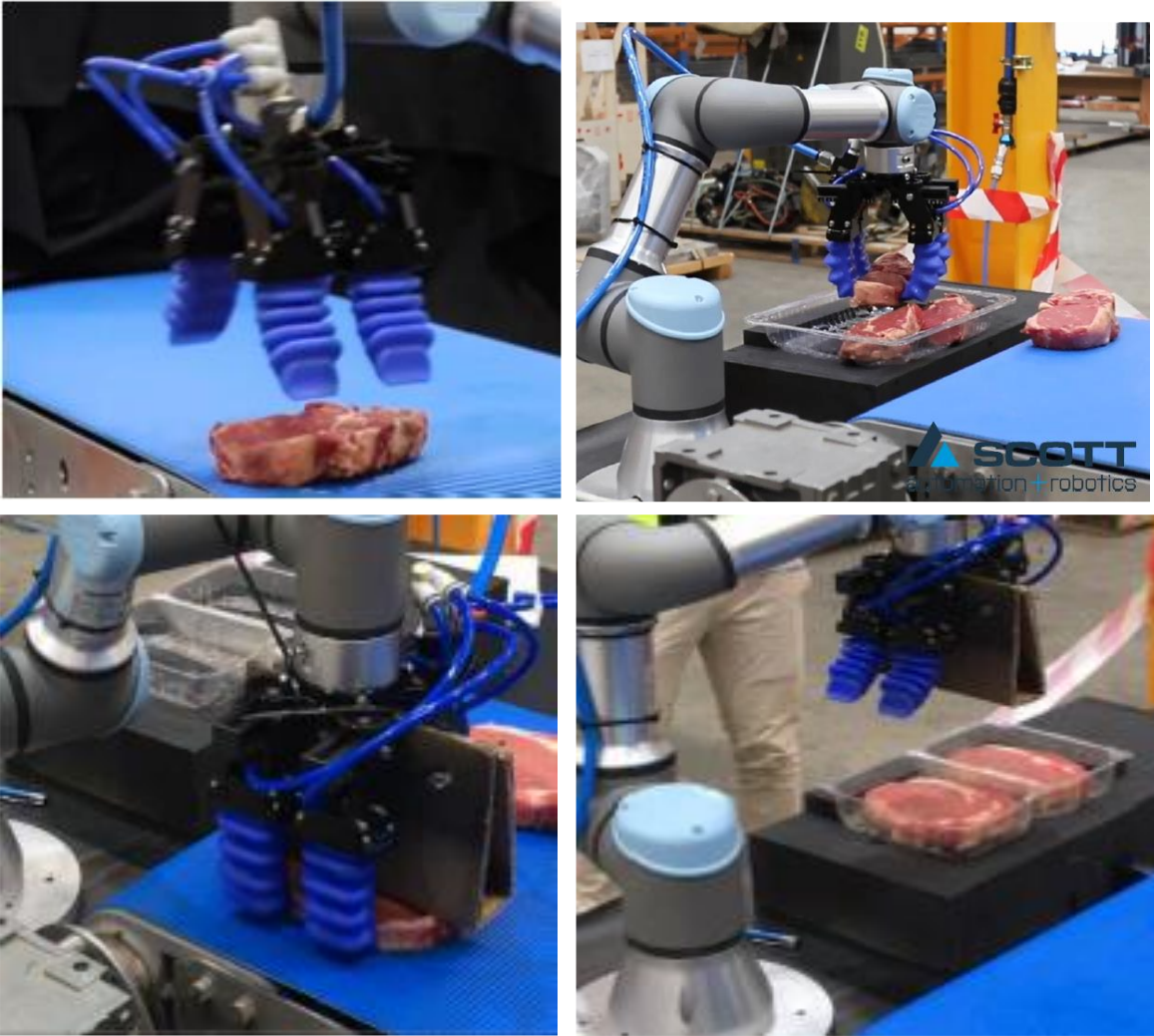
Several pick and place applications in the RROA red meat production lines have already been identified as potentially benefitting from cobotic technology. Trialling a cobot in these scenarios will provide valuable insight into the logistics of placing a cobot optimally on the floor in relation to the available floorspace and number of operators stationed nearby. The ability to combine cobotics with various sensing technologies such as proximity or line profile sensors, vision systems, and different types of toolheads could open the way to many more potential applications.

- Programming using cartesian robotic coordinates
- Vision systems development
- AI learning and convolutional network
- Yield improvements
- Performance optimisation
- Contaminant detection
- Development of safety compliant and effective grippers
- Adaptation strategy to cover multiple products (red meat has over 100)

Some of the expected challenges include the development of grippers compatible with the irregular shape of red meat portions and a vision system capable of guiding the robot in picking and placing meat portions in trays while achieving acceptable presentation. Grippers have been selected over vacuum systems for their better and easier cleanability resulting in improved food safety. Gripper trials have been performed and concepts of a smart learning vision system are being researched by Coles RROA SME (See Photo 2).

Speed of operation while maintaining safety and achieving required rates is another challenge.

Vision capable of detecting human entry into unsafe spaces around the robot is a challenge that other projects in the innovation stream, such as those with Lumachain incorporating AI, may be of benefit.



**Photo 2:** Cobotic Gripper trials demonstrating picking and placing raw red meat cuts and packaged product.

This project has recently completed milestone 1 where research work and learnings have focused on setting the foundations of the project by:

- Market and industry research on potential cobotic technologies and methodologies
- Development of a detailed project testing schedule
- Formation of project steering group
- Identification of key value propositions/potential areas of application on red meat processing

Intelligent vision systems combined with robot automation technologies are being evaluated to reduce labour requirements (head count), increase productivity, reduce RMI risks and improve quality of various manual operations.

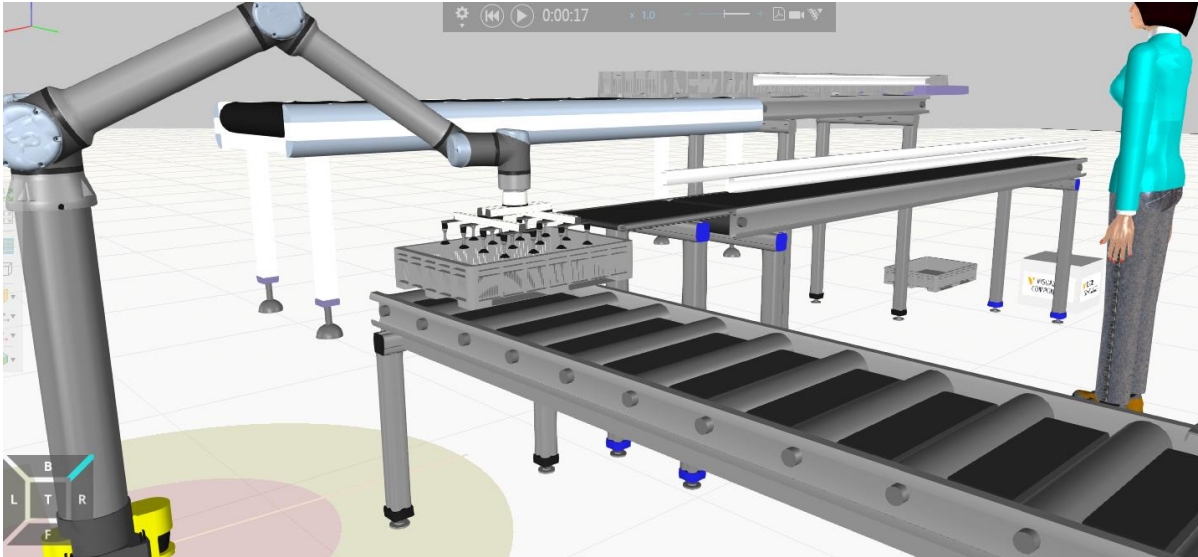
The knowledge gained in this milestone will enable and guide development into the next phase, which will consist of trialling the technology in practical red meat packaging applications. Preliminary trial work will be conducted on packaging applications to enable RROA R&D project team to gain hands on experience with the technology and all aspects of its implementation. Initial trials will target simple applications to gain a deeper understanding of the technology's capabilities and limitations in order to develop a general methodology or framework for successful adoption of cobotics in red meat processing and recommendations for future applications.

Trials will target simple applications to gain a deeper understanding of the technology's capabilities and limitations in order to develop a general methodology or framework for successful adoption of cobotics in red meat processing and recommendations for future applications.

Two applications have been selected for automation by cobots. As agreed by the Project steering group, the intent at

this initial demonstration stage is to target simple yet relevant applications to gain experience and knowhow. A successful demonstration will showcase cobot capabilities and build confidence in this relatively new technology.

One initial demonstration concept was an application at Line 4. Line 4 is used to package red meat in VSP format, this line does not have automated case packing capability and relies on human operators to load the VSP trays into crates. This is a highly repetitive and relatively simple task which only requires a set number of trays to be placed in each crate. Automation by conventional methods would require considerable investment in a case packer and floorplan reconfiguration (See Photo 3).



**Photo 3:** Crate loading by cobot on line 4, simulation produced using Visual Components software.

The objective will be to use a cobot to load the VSP trays in crates, and then send the loaded crates onto the next step where it is weighed, labelled, and sent towards the automated inventory system.

#### 4.1.2 Crate 3D scanning for position detection of bail arms and valid pack stacking

Coles RROA is reliant on an automated refrigerated warehouse system which buffers production operations from outbound order shipments. Improperly stacked trays or lifted bail arms cause faults in the system creating down time and loss of productivity (Refer to Photo 4).

A project consisting in the implementation of various corrective measures aimed at eliminating the issues at the source is near completion. The measures include an innovative 3D camera scanning solution which helps detect incorrect bail arm positions and ensure they are corrected before stack issues occur in the buffer chiller.

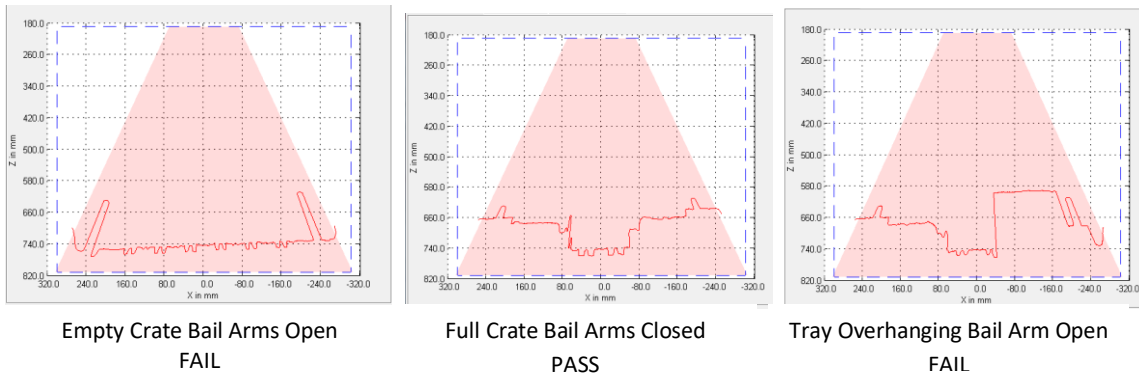
The solutions were initially implemented on one production line as a trial, the data gathered before and after implementation showed a considerable reduction in the number of crate rejects and stack issues for that particular line. This served to prove the concept, quantify the benefits, and facilitate project approval. Implementation of these solutions on all production lines is nearly complete and a reduction in crate stack issues has already been noticed in operations.





**Photo 4:** Improperly stacked trays or lifted bail arms cause faults in the system.

Along with other sensors validating key attributes, the 3D camera scanning system is used to verify bail arm position and stack alignment. This is tied into the existing automated system which is now capable of rejecting the defective stacks for rework before they cause system disruptions on the line (Refer to Figure 1).



**Figure 1:** 3D Camera scans demonstrating the position of the bail arm on the crates to determine the pass or fail status.

The ability to reject inadequately stacked crates has helped reduce downtime and increased system reliability. By limiting the number of system interruptions and troubleshooting needs, efficiency gains are also expected.

Implementation of these solutions on all production lines is nearly complete and a reduction in crate stack issues has already been noticed in operations.

Further vision systems would be beneficial in the mezzanine levels as the stack transition across conveyor gaps which can flip bail arms open again. Couple the detection with a bail arm closing system would be an ideal solution to explore.

**4.1.3 Challenging primal “manufacture by” dates**

Current primal “manufacture by” dates at RROA are based on strict validation by Coles which has determined the maximum age of primals from pack on date. Note: This date is well before the labelled expiry date of the primal. Coles are investigating initiatives to help extend the time secondary processing has to use primals through optimising handling and temperature control processes throughout the supply chain.

An increase in primal “process by date” would provide more flexibility to planning and improved efficiency in supply chain operations. Some of the initiatives will be to work with primary processing to reduce bacterial count through improved controls. This reduction could even benefit Coles through enabling the extension of shelf life of the retail product.

This explorative study will be led by the RROA project team with guidance and oversight by the quality assurance department at RROA. The aim is to better understand the elements which can impact primal shelf life and how bacterial count in processed primals affects shelf life of finished products. For example, lowering the storage temperature (within standards) at different stage in the supply chain, including Supermarket storage temperatures which would help slow bacterial growth.

The study will involve a review of existing quality data, processing and handling tests, microbial count and organoleptic assessments of primals, and shelf life studies of finished products.

Results may include development of new guidelines or quality acceptance thresholds for primals based on micro assessment.

#### **4.1.4 New automated alternative order picking solution for red meat capacity growth**

The engineering and RROA project team have completed a new automated outbound material flow concept which has enabled an increased output capability in red meat.

The project implemented a fully automated robotic stacking and palletising system integrated with the current order picking management system.

Currently, all finished products are sent from the end of the packaging lines into a buffer chiller. A fully automated inventory management and order despatch system then allocates products/stock to orders for picking and despatch. On peak production days, typically Wed/Thurs each week, this system reaches its design capacity and occasionally limits production rates.

The new system consists of a new picking and palletisation robot which has been installed at the end of two selected production lines. Finished products will be directly allocated to orders without going through a holding buffer and will be managed in parallel with the existing inventory management and order despatch system. This new “bypass” material flow path provides added capacity and flexibility to outbound operations and enables additional volume handling on the red meat floor allowing access to growth opportunities for existing or new red meat production lines.

Much innovation has gone into the development of this solution which required custom designed hardware, programming, and logic for seamless interaction with the existing systems which has been mostly conducted inhouse.

New methods for automating data flows between the previously disparate MES and despatch systems, robotic movement algorithms to handle heavy loads quickly and safely, sensing technology from other projects to manage bail arms, stack heights and doubling stacking led to a successful project.



**Photo 1: Crate Infeed**



**Photo 2: Robotic Palletising**





**Photo 3: Pallet Shrink Wrapping**



**Photo 4: Finished Goods Racking**

The solution provided a new material flow path for peak capacity days to eliminate production rate limitations allowing growth opportunities for existing and new red meat production lines. Capacity levels of rates up to 550+ crates/hr per line were achieved which was a significant improvement in production throughput.

Continued development of vision systems capable of detecting bail arm status in a full stack would be of benefit to avoid stack lean and thus robot collisions or stack collapse.

#### 4.1.5 Loading and unloading efficiency improvement

Finished goods pallets have typically been stacked two layers high in trailers by using horizontal bars to support the second layer. The process of installing bars and removing them slows the loading and unloading process, and is time consuming for operators.

RROA and one of the Coles distribution centres (DC) have been working together in trialling a time saving new method of loading pallets into trucks for transport without bars. Trials have so far been successful and have resulted in time savings of approximately 30% for both loading at RROA and unloading at the DC. If applied to all loads, this method could potentially save on logistic costs by labour reduction. RROA has commissioned a logistics engineering consultant to assess the risks and ensure safety of this transport loading method.



**Photo 5:** Double stacked pallets in trailer

An external safety audit was completed to confirm CoR compliance. Training is required for forklift operators in the area of correct placement of pallets and due to the fact 50% of pallets cannot be double stacked due to uneven layers.

Future steps are to complete Coles ordering and WMS changes to ensure even layer levels of crates are ordered, enabling the remainder of pallets to be double stacked.

#### 4.1.6 Extending packaging material yield

Following successful trials with material suppliers, RROA has recently downgauged the thickness of base film material used for the production of MAP trays. The 13% thickness reduction has resulted in substantial savings on material costs as well as efficiency improvement by reduction in changeover frequency. For the same weight of material, the rolls now deliver more length, hence more trays can be produced from a roll of material.

There were some initial challenges with the move to the thinner film at the case packers. Heavier packs deformed when picked up, due to a decrease in tray rigidity, resulting in dropped trays.

RROA worked with Multivac to create a new mould design which did not require a totally new die. New inserts were added into the existing mould to create extra ribbed sections for the trays. These ribs added enough rigidity to the trays to stop the excess deformation during case packer pickups.



**Photo 1:** New Die Inserts to add extra Ribs



**Photo 2:** New and Improved Trays with additional ribs for rigidity improvement

Successful Poultry and Line 3 Red Meat down gauging film by 15% resulted in overall savings of over \$1 million across resin reductions, changeover labour reduction, material losses at changeovers, and transport reductions.

Mince film thickness down gauging by 7% is about to be trialled. If successful, this will deliver a potential saving of \$257K/year and more trays per weight of roll.



Further down gauging in Poultry is also underway pending trials of 11% film thickness. If successful, this will deliver a potential \$420K/year in savings.

Research is ongoing to further downgauge the base film thickness across the plant, while maintaining tray rigidity, barrier properties all while moving to fully sustainable materials.

#### **4.1.7 Air and surface purification (J20216)**

A major focus in the current quarter has been on interventions to provide efficiencies across the operations. Australian red meat processing maintains high food hygiene standards, which are achieved at significant costs (i.e. estimated 15-20% of production cost). The current Stage 1 validation project brings proven technology to Australia for first trials to evaluate continuous sanitation throughout value-add production with substantive cost savings. The proposed project is aligned to the RROA-MLA collaborative Co-innovation strategy to deliver cutting edge quality initiatives (see Figure 2).

Australian red meat processing has exemplar food hygiene standards, which comes at significant cost to the business (i.e. generally considered 15-20% of production cost). There are significant production efficiencies and opportunity cost savings that could be delivered by more efficient and cost-effective hygiene maintenance procedures. A major Australian meat retailer (Coles Supermarket) has identified significant benefits across its entire supply chain back to their producers and for its customers by evaluating new processing technology in Australian first trials. The primary aim is to unlock value through significant gains in processing efficiencies and cost savings with the application of new air and surface purification technology to produce and maintain high hygienic standards in red meat production areas. Specifically, new Active Photocatalytic Oxidation (APCO) purification technology that was originally derived from 40-year-old passive PCO Sterilisation technology, has been recently modified and commercially proven in various global applications including in medical and food processing.

The proposed project will bring the air and surface purification technology to Australia for validation in a specific Stage 1 application in red meat processing. The project will provide insights and practical knowledge on how this publicly available technology can be applied to benefit red meat production operations across the whole value chain. The outcome will also be used to identify and inform any potential future R&D. It is envisaged that this may lead into further research aimed at incorporating the technology into MAP, utilities, odour control in waste management, increased sanitation and equipment cleaning applications to provide additional microbial reduction.

The primary proposition of the project is to deliver significantly more efficient and cost-effective hygienic processes than the current manual wet cleaning methods required prior, and periodically throughout, red meat production (See Supporting Document). It is proposed that continuous sanitation throughout production will deliver benefits to labour and utilities (energy and water savings), and asset utilisation improvement with minimal manual washdowns between change of production runs. Additionally, the technology aims to reduce and/or eliminate airborne and surface pathogens (including viruses such as SARS-CoV-2), and thereby potentially extending shelf life of retail ready red meat products. Reduction and/or elimination of pathogens and viruses, could provide safer workplace environments in meat processing and minimal disruption to production at times of operator illness or outbreaks.

The new project has been developed to “Evaluate innovative processing technology for production efficiencies and cost savings in food processing including red meat”. The project has been RROA & MLA peer reviewed and approved for contracting. Planning and project scheduling are underway.

**Figure 2:** Coles RROA / MLA Collaborative strategy, including this project as a priority focus area.



**Photo 1:** CSIRO Microbiology Lab Test

This project is ongoing but the benefits already seen in global installations range from reduced cost of sanitation, reductions in power and water usage, reduced absenteeism related to pathogenic vectors, increased shelf-life of fresh products, satisfying new export requirements around COVID safe processing and reduction of unwanted odours in retail spaces.

It is envisaged that this may lead into further research aimed at incorporating the technology into MAP, utilities, odour control in waste management, increased sanitation and equipment cleaning applications to provide additional microbial reduction. Further benefits across the supply chain starting at producers and progressing through to retail to further evaluate improvements to shelf-life, hygiene standard improvements and reduce pathogen related absenteeism are exciting opportunities to investigate.

## 4.2 Digital Solutions

### 4.2.1 RROA Digital Value Chain Strategy Development and Digital Officer (P.PSH.1160)

Coles RROA has appointed a resource to this role and work has begun with focus on the development of the Digital Value Chain Strategy and implementation of some digital initiatives.

The strategy has a specific focus on secondary manufacturing, material sourcing and supply chain effectiveness. This will be managed through the provision of new data capture and storage methods and advanced data analytics to generate new insights for the business. Priorities include enabling data driven decision making, data collaboration, business optimisation and production analytics.

A framework for development and implementation of red meat digital strategies has been set and a preliminary list of target digital applications defined. The various initiatives under this project will have special consideration of data availability, metrics, and resource planning to grow the digital portfolio.

The project has recently completed milestone 5 where efforts have focused on the rollout of the OEE program and the development of a Master Data management tool, based on open source Tillit software.

The Tillit development is aimed at automating and consolidating data management to promote data driven decision making. The main value proposition to the Red Meat Processing Sector is to evaluate the use of an open source system as a low-cost alternative to Excel and other common methods to data management. This project is anticipated to deliver significantly improved capabilities to manage organisational data.

The production planning department has invested considerable time and resources in building a live capacity model of Coles RROA.

The quality and structure of data is a particular challenge in the Red Meat industry as the products do not conform to a fixed definition. ERP solutions offer a solution but generally have a high price and are not suited to dealing with challenges such as variable weight and complex substitutions of specifications. Proving and generating learnings from an open source application may provide alternatives to the current more popular solutions – likely in the areas of smaller operations that do not have the investment potential of larger businesses.

The process of developing a data model will allow improved insight into data points within the RROA operation and Coles Red Meat Supply Chain - reducing the investigation stage of future analytical projects. The consolidation of Excel based data will enable improved analytics from integrated databases. Analysis of data will become more accurate through both quality of data and improved capability to transform data into insights – including those across the Red Meat Supply Chain.

Progress was made in the previously identified areas of OEE, with the Digital Dashboard expanding from Availability only, to now include Quality and Performance data which enabled the full calculation of OEE (Availability% x Quality% x Performance%). Top 5 Downtime Occurrences and deep analysis around Availability data uncovered some key operational issues. The Operations team worked through alternative operating processes to increase available time and reviewed both live and historical data to analyse the impacts of their changes. This process has led to immediate improvements in OEE.

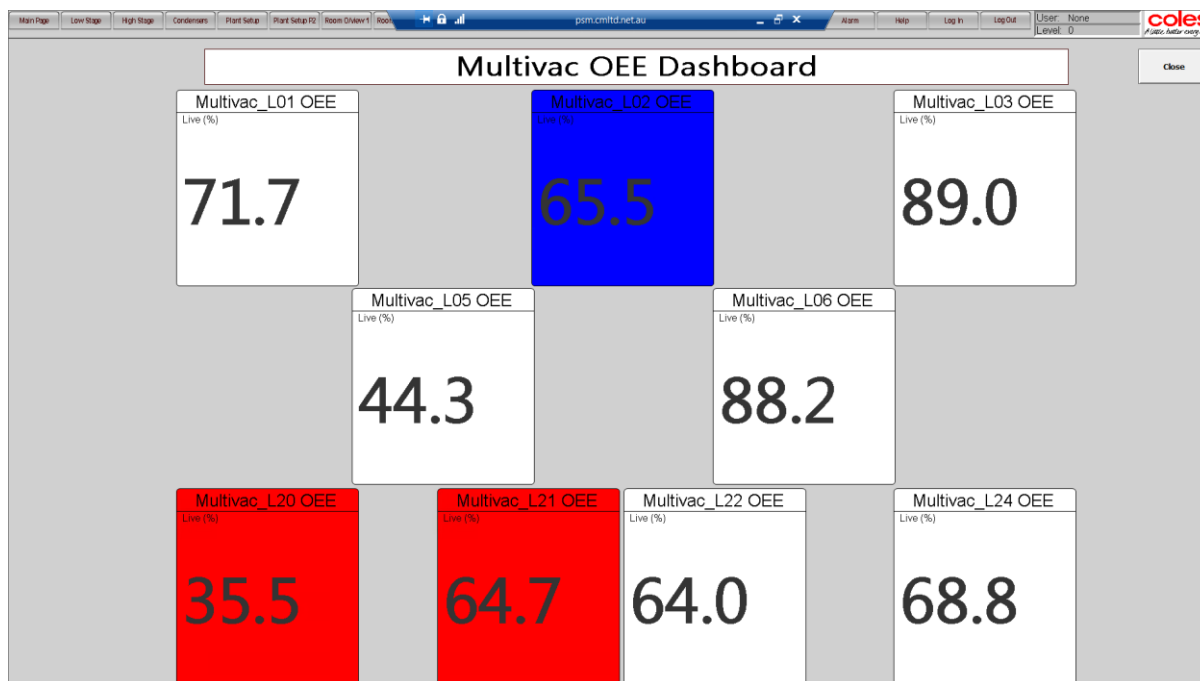


Photo 1: Digital Dashboard – OEE Display for all Multivac Lines



Photo 2: Digital Dashboard – Live Data View in Engineering

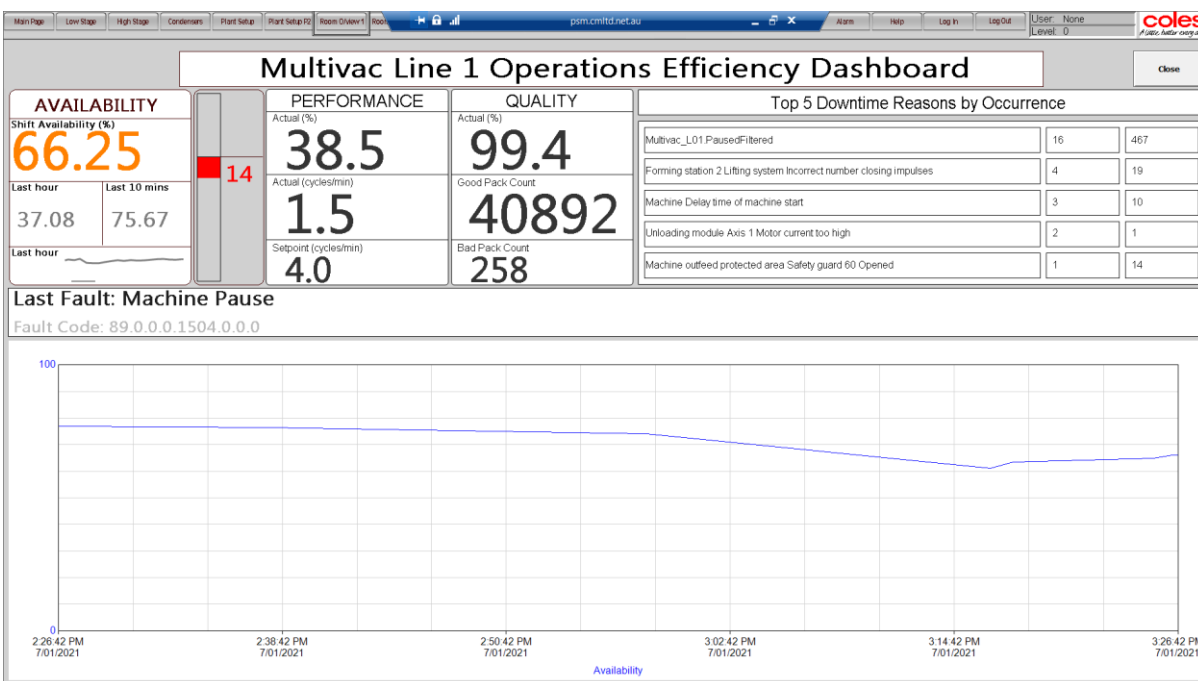
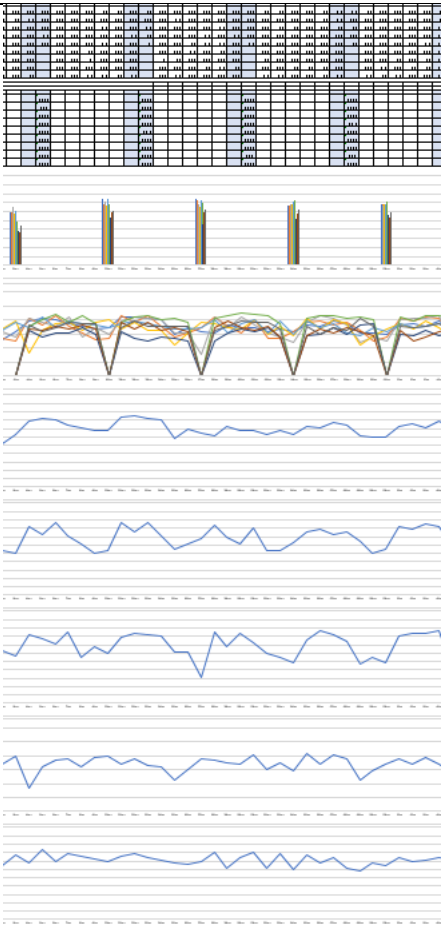


Photo 3: Digital Dashboard – Detailed Line OEE including Top 5 Downtime Reasons



**Photo 4:** Availability Trend

#### **4.2.2 Business Contingency Modelling around automation systems redundancy prior to volume ramp up**

Coles RROA has developed a planning and business continuity initiative which aims to increase supply chain reliability and ensure projected growth is adequately supported. This modelling serves in identifying capacity limitations and system vulnerabilities which could cause interruption to critical parts of the production operations and supply chain.

The production planning department has invested considerable time and resources in building a live capacity model of Coles RROA. This tool is used to identify current and projected capacity limitations for different volume and product demand scenarios.

Analysis of the data and the pre-empting of bottle necks is used to both optimise production planning as well as identify the operations requiring capacity upgrades to support growth. This has helped justify a number of recently completed capacity upgrade projects which have been key in successfully achieving a 30% increase in throughput.

Next steps are to continue to develop the capacity model to determine other areas that will limit capacity, create bottle necks and allow for optimisations in production planning.

#### **4.2.3 X-Ray scanning technology**

On January 8<sup>th</sup>, MLA coordinated a meeting between Rapiscan and the Coles RROA R&D project team. Rapiscan showcased innovations made in the development and adaptation of advanced x-ray imaging technologies to meat product quality assessments (See Appendix 3). Banking on existing technology platforms developed for and extensively used in aviation baggage security screening, Rapiscan are seeking to explore new markets and applications where their technology can be adapted to benefit manufacturing operations.





**Photo 6:** High performance X-Ray scanning unit by Rapiscan

There are many potential applications to explore within Coles RROA (See Table below). A first may be to use X-ray scanning to inspect incoming raw materials and assess quality attributes. If combined with traceability enhancements and downstream quality assessments of the finished goods, the data collected could be valuable in identifying trends or interactions of upstream supply chain operations affecting final product quality. This data would also be valuable to the Digital Value Chain Strategy Development initiative.

**Table 1:** Potential red meat applications & value propositions in Rapiscan industrial X-Ray imaging

  		
<b>Red meat opportunities in Rapiscan industrial X-Ray imaging – Potential applications &amp; value propositions</b> - Subject to ongoing input (Confidential to Coles RROA, Rapiscan & MLA) -		
Potential Applications (Use of Rapiscan Tech)	Associated benefits (Assumptions)	Potential benefits & impact (\$, statement)
1 Foreign matter detection	<i>Benefits:</i> Contamination detection; Reduced dumped product; Reduced complaints & associated claims; Reputation & brand protection; Production efficiencies. <i>Potential Impact to RROA:</i> Verification of plastic &/or foreign matter contamination in minced product; 6-7T per hour; Single shift per day x 7 production days; Cleaning contaminated lines est \$50k per line incl 2h downtime.	Est AUD\$3-4m p.a. benefit  (in lost product and productivity p.a. currently for RROA)
2 Cut identification &/or verification	<i>Benefits:</i> Verification of Id of labelled cuts; Reduced complaints & associated claims; Reputation & brand protection. <i>Potential Impact to RROA:</i> Infeed & outfeed goods inspection for plant efficiency metrics; Inspection and accurate Id &/or quality of incoming and outgoing products; Provide metrics for overall plant conversion efficiency; Evaluate the efficiencies of plant system interventions; Verification of cuts; 6-7T per hour; Single shift per day x 7 production days.	Est AUD\$xx p.a. benefit
3 Chemical Lean (CL) verification	<i>Benefits:</i> Accurate CL% measurement of every product. <i>Potential Impact to RROA:</i> Verification of %CL in standard mince categories; 6-7T per hour; Single shift per day x 7 production days.	Est AUD\$xx p.a. benefit
4 Carcase yield measurement	<i>Benefits:</i> Accurate Id of fat vs meat vs bone. Max value creation by matching product to customer. <i>Potential Impact to RROA:</i> Verification of plastic &/or foreign matter contamination in minced product; 6-7T per hour; Single shift per day x 7 production days.	Est AUD\$xx p.a. benefit
5 Fat thickness	<i>Benefits:</i> Accurate measurement of fat thickness (of every product). <i>Potential Impact to RROA:</i> Verification of fat thickness; feedback provided to supply chain incl producer resulting in tighter specs and reduced fat trimming; 6-7T per hour; Single shift per day x 7 production days.	Est AUD\$xx p.a. benefit
6 Purge measurement	<i>Benefits:</i> Detection of purge non-compliance levels; Reputation & brand protection. <i>Potential Impact to RROA:</i> Verification of purge level and id of non-compliant sources; Continuous	Est AUD\$xx p.a. benefit

		improvement through producer feedback; 6-7T per hour; Single shift per day x 7 production days.	
7	IMF index verification of individual cuts	<i>Benefits:</i> Verification of IMF index for individual cuts; Continuous improvement through producer feedback; Infeed factory data linked to feedback to customised processing. <i>Potential Impact to RROA:</i> Feedback provided to supply chain incl producer resulting in tighter specs; 6-7T per hour; Single shift per day x 7 production days.	Est AUD\$xx p.a. benefit
8	EQ & objective measures	<i>Benefits:</i> Objective measure & provide EQ and trait(s) feedback to producers; <i>Potential Impact to RROA:</i> Continuous improvement through producer feedback.	Est AUD\$xx p.a. benefit
9	Cutting specs pattern recognition	<i>Benefits:</i> Measurement technology to be used to align product for further cutting and trimming, including re-aligning of product for waterjet cutting of fat; Fixed weight product cutting verification. <i>Potential Impact to RROA:</i> Meet specs and cutting standards.	Est AUD\$xx p.a. benefit
10	3D carton scanning	<i>Benefits:</i> Verification of Id of labelled cuts; Reduced complaints & associated claims; Reputation & brand protection. <i>Potential Impact to RROA:</i> Verification of incorrect carton contents; Meet specs and cutting standards. Product Id & label verification.	Est AUD\$xx p.a. benefit
11	Primal mass & shape measurement	<i>Benefits:</i> Primal mass and shape to inform weight-based portioning; Fixed weight product cutting verification. <i>Potential Impact to RROA:</i> Meet specs and cutting standards. Product Id & label verification.	Est AUD\$xx p.a. benefit
	etc		

**Note:**

- Potential applications of Rapiscan Technology(s) in secondary red meat processing.
- Concept propositions subject to ongoing input from Coles RROA, Rapiscan & MLA.
- This document on preliminary propositions and benefits of the potential applications of Rapiscan technology(s) is confidential to Coles RROA, Rapiscan & MLA.
- A potential scope of work for collaborative projects is subject to the outcomes of the preliminary value propositions and support to progress to R&D project concepts from the project steering group.

Lessons learned through networking sessions and implementations at other businesses in the industry along with trials led by collaborating suppliers, have revealed challenges around the robotics required to implement 3D cutting paths.

The ability to detect bone in products and create cutting paths around the bone reliably. The ability to feedback non-compliance to suppliers around red meat specifications for each product SKU. The ability to trim product to maximise yield. The ability to detect contaminants that traditional vision systems can't is an ongoing challenge. The ability to increase yields through more accurate measurements such as CL % and the possibility of integrating with cut to weight for fixed weight systems is a future benefit worth exploring.

Next steps are to continue to investigate through pilot programs all the potential applications which show benefits for the business.

## **4.3 Consumer Led Insights**

### **4.3.1 Evaluation of Red Meat in Vacuum Skin Packed (VSP) On-Board Retail Ready Format (P.PSH.1005)**

VSP packaging is being evaluated for its overall potential in bringing added value to the Australian red meat industry. Demonstrated benefits of using this type of packaging include:

- Enhanced product presentation
- Extended shelf life (compared to MAP)
- Use of the printable board to convey more product information to consumers
- Improved recyclability; boards can be returned to stores for recycling (as opposed to plastic trays which are disposable)

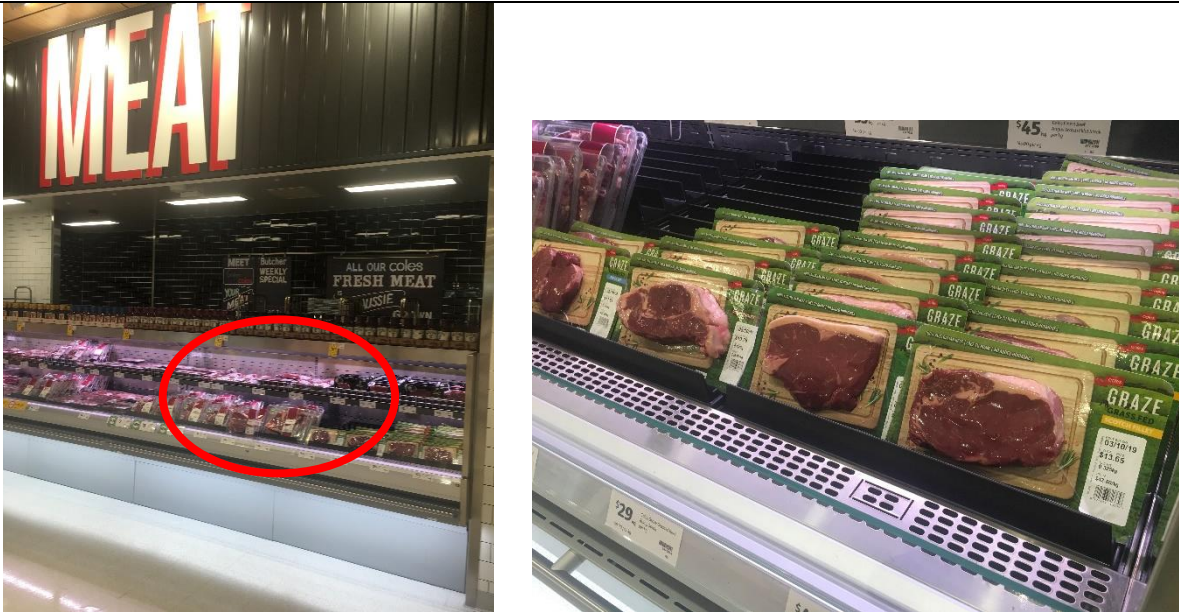
Four graze products have been launched in selected stores in VSP On-Board format. Consumer feedback study has been completed providing valuable insight on the following:

- Explore spontaneous awareness of new packaging format
- Prompted evaluation of new packaging format, first impressions and perceptions
- Awareness and perception of recyclability
- Overall preference
- Barriers
- Impact on purchase decisions and habits
- In-home usage feedback
- Presentation of product in retail displays (See Photo 6)

Overall, the study revealed customers had a very positive attitude and appreciation for the new packaging.

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- Explore spontaneous awareness of new packaging format
- Prompted evaluation of new packaging format, first impressions and perceptions
- Awareness and perception of recyclability
- Overall preference
- Barriers
- Impact on purchase decisions and habits
- In-home usage feedback
- Presentation of product in retail displays



**Photo 6:** In store presentation of ready retail beef cuts in the VSP on Board format.

The project was completed in May 2020 with the development of a cost benefit analysis for full scale implementation. A target product range was selected, and the equipment performance and functionality requirements developed to guide the equipment selection process. The positive consumer feedback regarding the new format as well as the sales uplift data from the test launch were included to support the business case.

Coles RROA provided red meat product samples to be displayed at MLA’s Red Meat 2019 Annual General Meeting in Tamworth in November 2019. The samples made a valuable contribution to the theme of “Supermarket of the future” (See Photo 7 and video footage at 2:16 minute mark <https://www.youtube.com/watch?v=JCKPsXFLONs>)

Benefits of the project have been:

- Export opportunities (300% increase)
- Enhanced product presentation
- Extended shelf life (compared to MAP)
- Use of the printable board to convey more product information to consumers
- Improved recyclability; boards can be returned to stores for recycling (as opposed to plastic trays which are disposable)

Next steps are to investigate implementation of this format on a larger scale.



**Photo 7:** MLA’s AGM Red Meat 2019 demonstration of Slimfresh red meat products 2019 at the “Supermarket of the future” display area

### 4.3.2 Exploration of European market trends and technological developments

In November 2019, members of Coles RROA senior leadership team travelled to the UK, the Netherlands, and Germany to visit leading retail meat packaging facilities. The objective was to observe the trends and successful practices adopted by these European producers and gain new insights and ideas transferable to the Australian market. The trends observed in the European market for fixed weight packs and on board VSP are expected to keep growing in Australia.

The trends observed in the European market for fixed weight packs and on board VSP are expected to keep growing in Australia.

The key learnings for RROA were centered around fixed weight production practices and the growing use of VSP format.

The business will continue to investigate European and other international markets for new trends, technologies and production processes to be able to apply those learnings to Coles RROA in order to reduce giveaway, labour and waste with fixed weight production.

The next steps are to introduce new VSP products into the Australian market and increase export opportunities.

#### 4.3.2.1 Fixed weight packs

Most sites have converted nearly entirely to this format. Though there are many benefits on labelling and marketing opportunities, more efforts are required to ensure waste and giveaway are at acceptable levels. This is done through various measures including engineered pack sizes based on finished price, pre-trimming of primals, ensuring optimal presentation into cutting equipment, and dedicated cutting operators with giveaway data as a live KPI on the production line (See Photo 8).





**Photo 8:** Fixed weight packs in European supermarkets

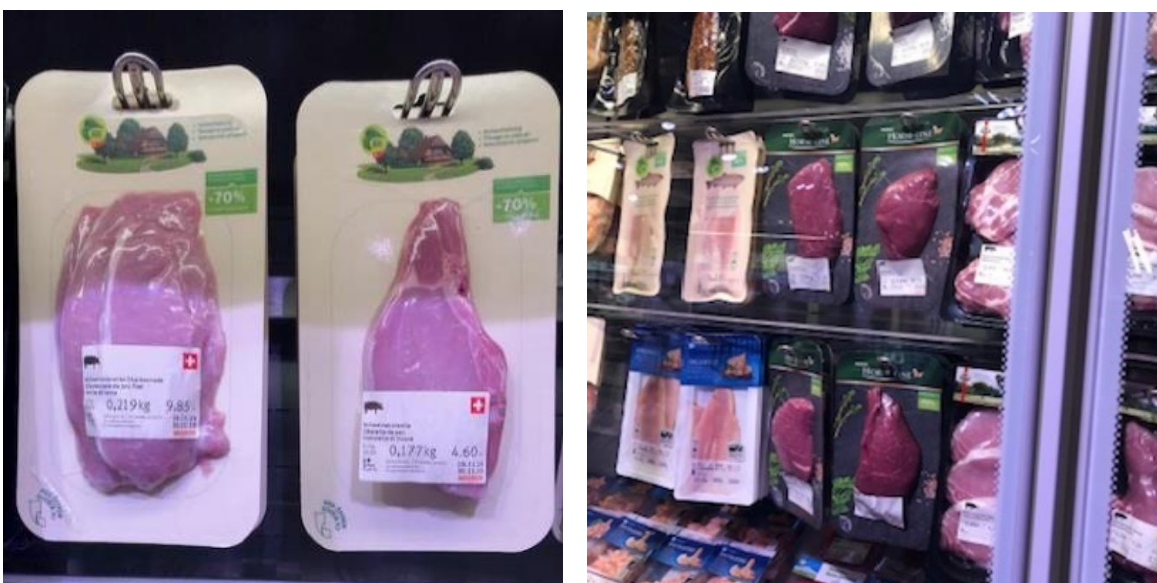
Various measures including engineered pack sizes based on finished price, pre-trimming of primals, ensuring optimal presentation into cutting equipment, and dedicated cutting operators with giveaway data as a live KPI on the production line have been some of the lessons learned.

Many benefits on labelling and marketing opportunities have been achieved.

New initiatives targeting the fine tuning of production processes, machine upgrades, or new equipment installation to achieve high accuracy on set weight packs will be investigated moving forward. Possible combination with X-ray scanning technologies and automated cutting systems will form part of these investigations. Efforts are required to ensure waste and giveaway are at acceptable levels.

#### **4.3.2.2 Continued rise of the VSP format**

Board and tray VSP formats have seen continued growth and are now one of the main meat packaging formats along with MAP. The VSP formats allow presentation in hang sell displays making optimal use of the space whilst providing an easy to maintain, visually appealing display (See Photo 9).



**Photo 9:** On board VSP in hang sell display

New VSP formats using a combination of cardboard and film are also being developed. These will allow consumers to easily remove the top and base sealing film from the cardboard tray, improving the recyclability of the cardboard (See Photo 10).



**Photo 10:** New prototype cardboard VSP

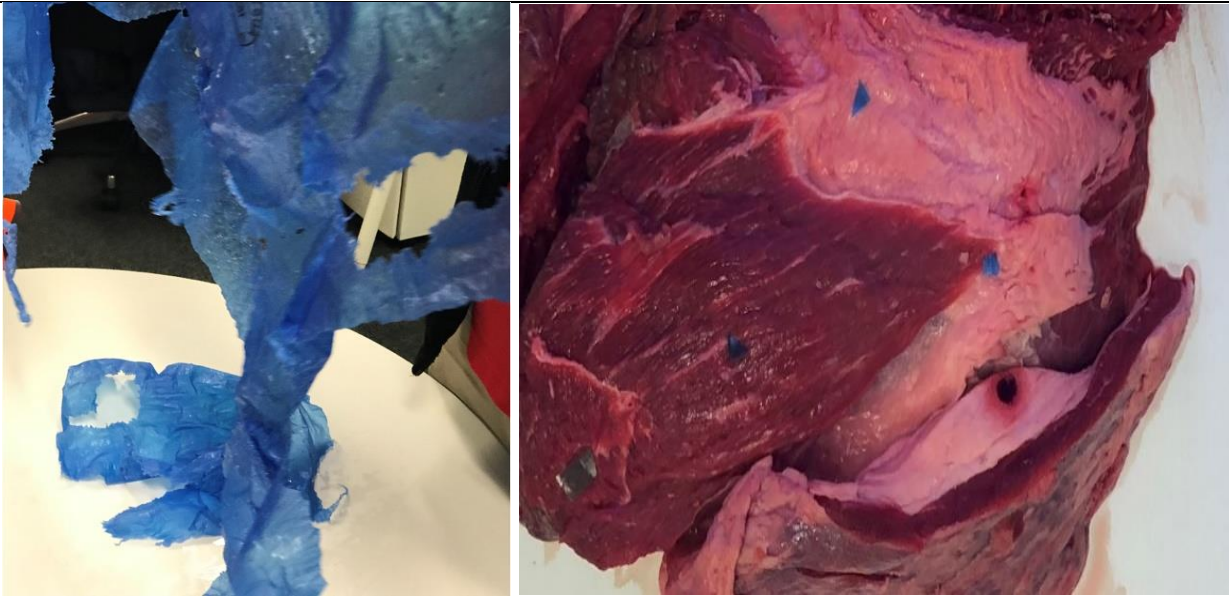
Challenges exist with combining recyclable VSP material with board while maintaining board flatness and limiting moisture ingress.

Next steps are to continue development of new VSP formats using a combination of cardboard and film which are fully recyclable.

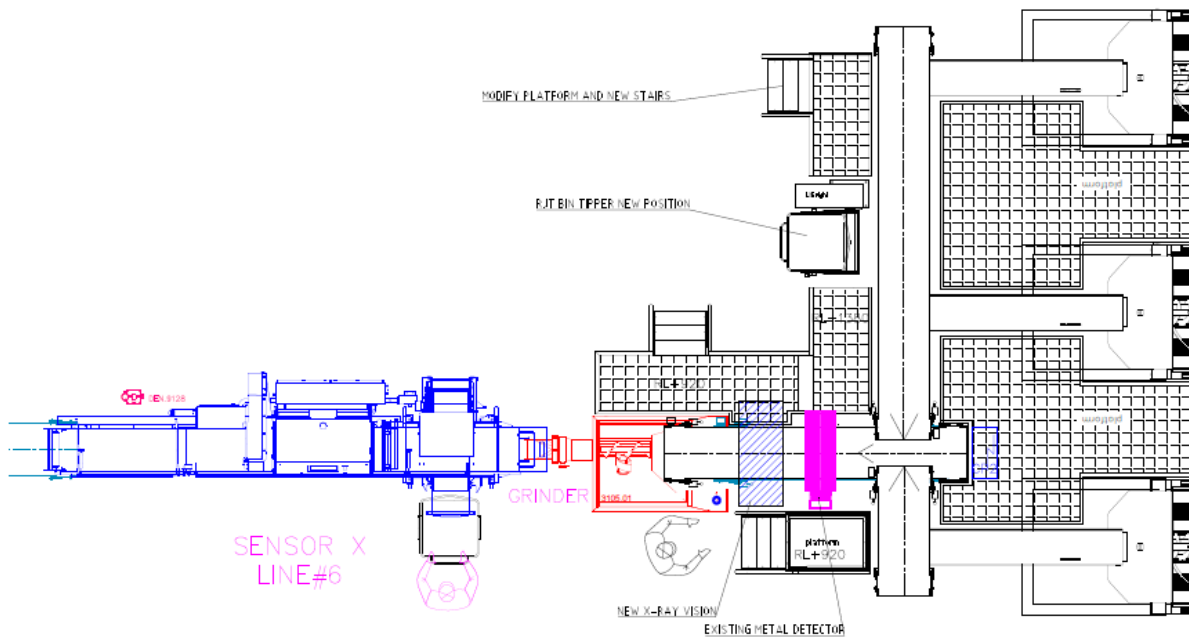
#### 4.3.3 Low Density Contaminant Detection (Project P.PSH.1129)

Mince contamination from low density plastics in the feed stream poses a risk to consumers and significant brand damage. Coles RROA has completed a project to install a new vision system capable of detecting the presence of surface contaminants as small as 1.5mm x 1.5mm. This technology has been developed and successfully trialled with the Danish Meat Research Institute (DMRI) and Coles project leader. A production unit has been installed and commissioned at RROA for detection of contaminants. (See Photo 11 and 12).





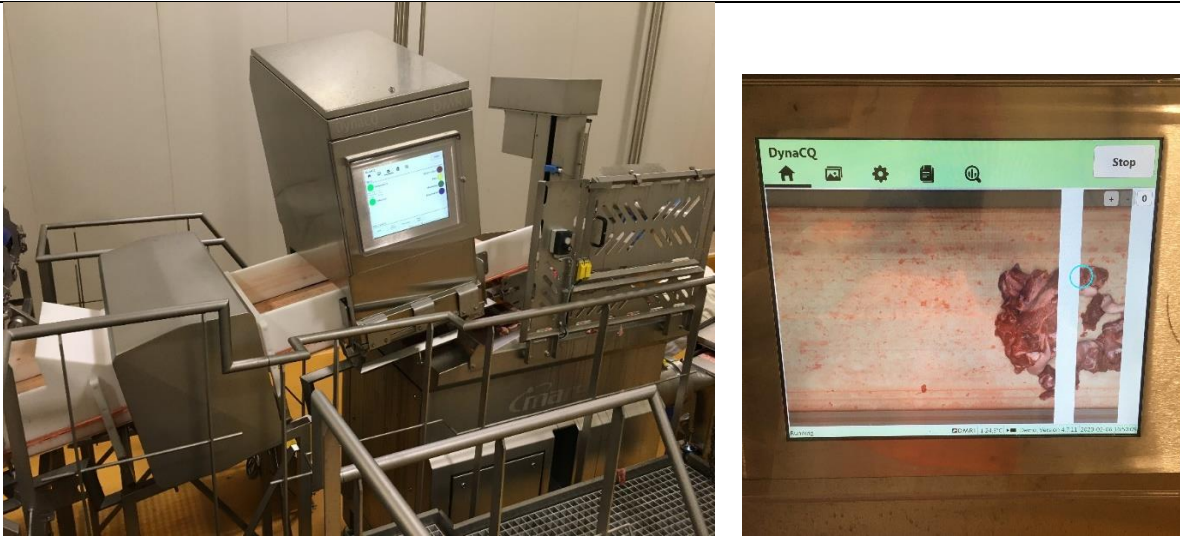
**Photo 11:** Plastic used in the handling and packaging of trim bound for mince and plastic contamination observed in product.



**Photo 12:** Design of Production room layout

Coles RROA has installed the new vision detection system on the mince infeed conveyor. In the weeks leading up to commissioning, the system’s detection algorithms were fine tuned in the intended production environment. Sample contaminants were used to trigger detection and ‘train’ the system. Commissioning was followed by a Site Acceptance Test (SAT) with the manufacturer present on site.

This system now inspects 100% of the surface of all red meat material being fed to the main mince lines and is considered to provide valuable reduction of the risk of plastic contaminants entering the mixers.



**Photo 13:** DynaCQ system installed on conveyor line at Coles RROA

Performance monitoring post commissioning revealed the system had a high sensitivity to the blueish membrane apparent on leaner beef trim material. As these membranes caused a high level of false detections when such raw material was used, DMRI was tasked to refine the detection algorithm. Developments targeting patterns were successful in reducing false detection due to the natural muscle membrane without loss of sensitivity to the real contaminants. This project was completed in April 2020.

Lessons learned centred around the ability to handle environmental challenges such as conveyor incline, colour and lighting. The ability to train the algorithms to recognise Australian red meat characteristics such as shiny, bluish membrane and not false reject was also developed.

A significant benefit of this solution is the ability to avoid millions of dollars in rejected product, downtime and/or product recalls and associated brand damage. The ability to maintain and exceed current volumes and be fully integrated with the current control system with minimal changes was also a great benefit.

Future stages of development with the vision algorithms should focus on making them more intelligent at distinguishing between membrane and actual contaminants to further reduce false rejects. Possible Artificial Intelligence integration will be of benefit.

#### **4.3.4 Fixed Weight Red Meat Retail Packs**

Fixed weight packs have been identified as a path to access new marketing opportunities and promote red meat sales. Fixed weights, and therefore pricing, allows for multiple and combination pack sales promotions.

In August 2019, Coles RROA launched 10 new fixed weight red meat products as part of its new summer range. Significant development efforts have been made to transition production of cuts from catch weight to fixed weight, fine tuning and optimisation of red meat cutting equipment and practices has been key to achieving success.

As this new market driven production requirement can be a challenge to yields and giveaway ratios, new optimisation opportunities will be identified. This may result in new initiatives targeting the fine tuning of production processes, machine upgrades, or new equipment installation to achieve high accuracy on set weight packs.

New initiatives targeting the fine tuning of production processes, machine upgrades, or new equipment installation to achieve high accuracy on set weight packs along with possible combination with X-ray scanning technologies and automated cutting systems are all future steps to be investigated.

### 4.3.5 Product Traceability

Guaranteed Confirmation Of Origin (COO) of meat products has been identified as a key element to the successful expansion into further market areas in PRC /Asia by strengthening consumer confidence and reducing chances of counterfeit meat. Including on or in pack COO confirmation and potential DNA certification would help promote the high quality of Australian origin red meat and ensure differentiation in international markets.

This technology is in use throughout Europe and North America as a measure ensuring integrity and brand protection. Industry feedback in Europe reports increased sales volume and a conversion to near 100% of own brand products to DNA Quality Assured product. This in turn results in consumers being fully informed of the COO of the meat products they are buying.

Coles RROA is evaluating the application of this technology to support and protect its export sales. Contact has been made with potential partners and suppliers; these are being evaluated to ensure the best fit with RROAs specific requirements (Refer to Photo 14).



**Photo 14:** Examples of available technology providers including 2a) Eurofins TAG, 2b) IdentiGEN DNA Traceback using Nanopore Sequencing.

In June 2020 the RROA projects team at also met with Lumachain, a new start-up company which uses blockchain technology and their own AI and software technology to track and trace the origin, location and condition of individual items in the food supply chain in real time. By applying their technology to bridge the information gaps and generate tracking data using block chain technology, Lumachain creates and compiles secure and indisputable information that can be shared across the supply chain. Lumachain has already begun work with one of RROA’s supplier and primary processor.

The team at RROA intends on investigating the scope required to trial this technology in an application where Lumachain traceability of raw material would continue into the RROA processing operations. Potential benefits would



not be limited to traceability, such a platform could also add value to quality systems and facilitate real time performance monitoring of all supply chain and production operations.

#### **4.3.6 Product Label (Interactive) Authenticity**

MLA with the support of Treasury Wine Estates (19 Crimes brand owners), have now engaged with, and received a proposal, from the developers of the 19 Crimes interactive label. MLA is committing to a design phase to ascertain:

- How the technology might work in our industry – technically
- What end customer experience / messaging would be worth utilising the technology for (i.e. convey a producer story, convey a brand story, convey industry credentials, etc).

Coles RROA are reviewing the options to collaboratively with MLA in the scoping study pilot to evaluate this technology for the meat category and the Coles business (both domestic and international customer bases are options to consider)?

Here is a link to the 19 Crimes YouTube clip – <https://www.youtube.com/watch?v=9pjr13ORqXM>

The development company Wunderman Thompson (<https://www.wundermanthompson.com/>) are based in Sydney and Melbourne. MLA & RROA propose to scope the pilot trial at the first meeting to be in Melbourne Coles Head Offices with Wunderman Thompson.

#### **4.3.7 New label formats**

New label formats have been developed to better align with Coles packaging sustainability and consumer convenience objectives.

The new labels feature improved presentation and convey additional information to consumers regarding, origin, quality, cooking guides, and sustainable disposal of packaging.

Coles RROA is evaluating the use of various label material options; materials being considered include plastics compatible with the top film recycling stream as well as wet strength paper which can be easily removed and recycled via curb side collection. Even biodegradable and non-toxic ink options are being assessed as part of this initiative.

#### **4.3.8 Value Added Products**

The RROA team is currently working on a project to enable production of a range of corned beef products. This high-volume value-added beef product will require new processing equipment, system upgrades, and logistic/ supply chain changes. These products will bring a considerable increase in red meat production volume at RROA.

Coles has also recently made the acquisition of an existing value-added meat processing site. Trading as Chef Fresh Coles, this is the first Coles owned retail ready-made meal production facility.

The site which was already producing for Coles on contract will continue operations providing a wide range of Coles Indian style readymade meal products. Ownership of such a facility will provide opportunities for Coles to invest in the development of new value-added meat products and provide customers with an expanded range of red meat convenience product options.

### **4.4 Sustainability**

#### **4.4.1 Feasibility study of Liquid Lock – Red Meat Tray Soaker Pad Removal (V.RMH.0097)**

Incorporating an array of small cells at the bottom of meat trays to capture product exudate has the potential of replacing soaker pads. This would reduce the packaging footprint, eliminate a non-recyclable element of the meat tray, and reduce labour requirements.

So far in Australia, all available trays featuring liquid locking type arrays are produced on off line formers. One of the main challenges in this innovation project is the development of a mould insert and the fine tuning of thermoformer machine parameter settings for inline tray production.

Despite the project completing an initial phase without successful production of trays with liquid locking array, much has been learned about the thermoforming process, materials, and RROA's Multivac thermoformers.

Interest in pursuing the project objectives remains and further trials with various partners and high formable materials are planned. Once trays have successfully been produced, a second phase of trials will focus on the effects of the new tray design on product quality attributes and productivity. Potential savings benefits are significant.



**Photo 15:** Trays formed during the trial – **Inconsistent forming quality**

Liquid lock trays produced offline will be trialed in select Coles in-store butchers, this will help continued progress on this by providing the opportunity to evaluate the effects on the user experience and impact to product attributes.

#### **4.4.2 Development of recyclable or biodegradable top film**

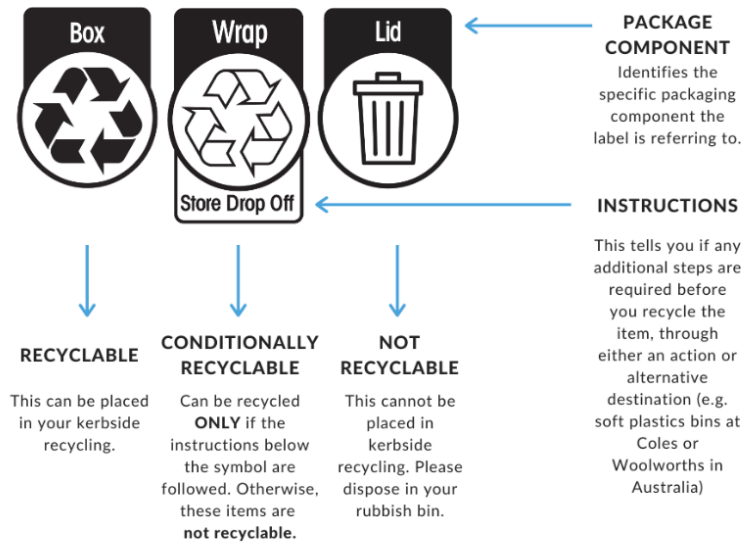
Meat MAP pack trays and top film are typically composed of more than one layer, the different layered materials have specific purpose and together provide the packs their functionality. These include physical integrity as well as the properties which ensure optimal product preservation and presentation.

Though these materials are key to ensuring food safety and optimised shelf life, their mixed nature also limits their recyclability. Coles RROA are working with various material suppliers in developing films in which compatible layers can be recycled in the same process, or where layers can easily be separated through the recycling process.

In September 2019, Coles RROA trialed new mono PET base and top film materials from Sealed Air on VSP pack production. The initial trials were successful, however some sealing issues with exudate contamination were encountered which will need to be addressed through further trials with alternate settings and materials.

In parallel to these efforts on material development, Coles RROA is also working on ensuring Coles sustainability commitments are met. These include making all Coles Brand packaging recyclable by 2020 and the introduction of new labelling information to promote recycling.

As a member of the APCO, Coles has committed to assessing recyclability of all its Coles branded product packaging through the Packaging Recyclability Evaluation Portal (PREP) Tool. The PREP tool is an online platform publicly available (<https://prep.org.au>) to organisations to help verify if their packaging is or isn't recyclable in Australian and New Zealand kerbside collections. Based on this assessment, the recyclability of each packaging component will be clearly stated on the label in accordance with the Australasian Recycling Label (ARL) format (See Figure 4).



**Figure 4:** Australasian Recycling Label (ARL) format

The objective is to promote recycling and help guide consumers in identifying the most sustainable way to dispose of packaging. Since 2018 Coles stores have also provided every supermarket with REDcycle bins where soft plastics can be returned to store to be recycled into new materials. Though these plastics cannot be recycled into their original form, these materials have been used to make outdoor furniture and have even been trialled in a road paving project in Victoria. This initiative has successfully been keeping plastic bags and soft plastic packaging out of landfill.

In August 2020, the RROA procurement team and Coles brand managers have outlined an expanded material trial plan. The team has engaged with new packaging material vendors and sourced sample rolls of new materials to trial in VSP and MAP applications. A detailed evaluation table has been defined to ensure all quality, productivity, supply chain and commercial aspects are measured against the current baseline. The trials will be scheduled over the months of October to May 2021.

The current packaging materials rely on multiple layers which provide high barrier properties to oxygen and moisture in order to extend shelf life and ensure pack sealability. These layers and the mix of polymers however make these plastics difficult to recycle. In answer to the demand for more sustainable options, many packaging material suppliers are now promoting a range of curb side recyclable mono polymer products such as A-PET or R-PET (Amorphous or % recycled PET). These mono PET films however still have much higher oxygen transmission compared with the layered material. It will be interesting to compare performance of these materials on shelf life and other quality aspects.

Good shelf life with mono PET materials, challenge remains for top film and VSP packaging materials.

Continuing trials with new suppliers have been ongoing with further studies scheduled through February and May of 2021. A focus on seal integrity in the presence of product exudates on the sealing flanges, followed by shelf life trials and extended production runs will determine if these recyclable materials are able to replace the current non-recyclable materials.

#### 4.4.3 Mince Cooling by Liquid Nitrogen Injection (V.RMH.0096)

This project is evaluating the use of Liquid Nitrogen as an alternative coolant to carbon dioxide. The initiative has been driven by a need for contingency measures in the event of interruptions in the supply of carbon dioxide which have historically been known to occur.

A production trial was completed in September 2019 at Coles RROA with support from the mince mixer manufacturer (Marel) and local industrial gas supply company Coregas. The trial successfully confirmed the suitability of liquid nitrogen as a coolant in red meat mince production.



**Photo 16:** Portable nitrogen vessels used for production trials

Based on the measured operational parameters affecting productivity and consumable usage, operating costs are estimated to be comparable to standard operation with CO<sub>2</sub>. Preliminary quality assessments indicate there are no negative effects on product quality attributes.

Following completion of the project in December 2019, the results have supported the decision for Coles RROA to progress to a second phase with a project to install liquid nitrogen cooling capability on all its mince mixers to allow full scale production trials using the alternative coolant. In addition to providing a cost-effective contingency measure in case of supply shortage of CO<sub>2</sub>, the use of liquid nitrogen also provides a considerable reduction of greenhouse gas emissions.

Vacuum jacketed distribution piping and an upsized nitrogen storage vessel have been installed to support full scale mince production. All mince mixers have been modified to use liquid nitrogen as the main source of coolant.

An analysis of the cost of CO<sub>2</sub> based mince cooling per kilogram of mince compared to that of N<sub>2</sub> mince cooling have shown significant annual savings at current CO<sub>2</sub> prices with additional savings as prices continue to increase. Further to cost increases, CO<sub>2</sub> supply has also become erratic.

The conversion to liquid nitrogen mince cooling has thus decreased greenhouse CO<sub>2</sub> gas emissions by 80T/month (405 trees), decreased the cost of cooling mince significantly and added supply security to the Coles RROA plant operations.

Next steps are to continue monitoring nitrogen usage and confirm cost savings.





**Photo 17:** Nitrogen storage tank before and after

#### 4.4.4 Recycling of clean plastic

Clean plastic, in the form of trimmings, offcuts, and unused trays, can be recycled by the supplier to make the same film material. Efforts are being made at RROA to improve segregation of such materials from general waste streams and maximise the amount of material being recycled.

New processes have been put in place and equipment relocated to support this effort. Simple measures such as the use of coloured bags are facilitating and encouraging operators to segregate materials at the thermoformers. Plastic shredding equipment has also been relocated and manning hours increased to create a pull on the material flow.

These measures have already doubled the amount of material being recycled, diverting plastic away from landfill and back into useful and valuable material is not only in line with sustainability objectives, it also provides financial benefits in terms of credits on material and savings on waste disposal. In the coming weeks efforts will continue with aim to keep on facilitating the process and encourage all team members to contribute to the recycling effort.

A new initiative of collecting and recycling poly propylene film cores has begun, further contributing to the business' bottom line while also reducing plastic landfill waste.

New methods of making segregation, collection and preparation of clean plastics to allow for recycling have been learned.

Significant financial benefits have been achieved from plastic diversion from landfill and a recovery of 300 tonnes of offcuts per year have been achieved.

#### 4.4.5 Raw material supply in reusable plastic trays

Raw material received from primary processors is typically supplied in cartons on pallets. At the start of secondary processing at RROA, raw material is decartoned and cardboard sent to recycling. There is an opportunity to reduce costs and waste by eliminating cardboard and converting to reusable crates or palletcon bins for raw material transport and storage.



Trials are being planned to evaluate feasibility and costs, this change would affect operations at primary processing as well as the handling and storage of product in secondary processing. Washing and return of the reusable transport units also needs to be considered.

Though it is unlikely all suppliers will be able to move away from cardboard in the short or medium term, this initiative represents considerable cost savings, removing hundreds of tonnes of cardboard from the supply chain every year and is another step towards improved sustainability.

Efforts continue as Coles works with suppliers to convert from cartons to reusable crates.

#### **4.4.6 Laser etching of crates to replace labelling**

The reusable crates used to pack and handle finished goods through the automated systems have fixed asset, unique barcode labels. These are however prone to wear and tear damage due to the regular wash operation the crates go through at every cycle. Crates with missing barcodes cause issues in the automated system and need to be removed for relabelling.

A more sustainable and long-term solution is being investigated which would involve laser etching the barcodes onto the plastic crates. If successful, this will reduce waste of plastic labels and improve reliability of the crate barcodes.

Further research into the use of embedded RFID tags would be an alternative method worth investigating.

#### **4.4.7 Glassine Label Backing Paper Recycling**

Glassine label backing has been another contributor to landfill waste from the Coles RROA packaging plant. A program to switch labels to a backless format has led to a conversion of most production lines to labelling machines which handle this format, thereby reducing the glassine liner waste.

However, several labelling equipment types still utilise glassine backing liners. As such a study was commissioned with the main label supplier to investigate the feasibility of recycling this waste product.

Current analysis suggests glassine label liners from all current suppliers can be recycled.

Feasibility studies have been underway to determine the most efficient way to segregate and collect this waste product for collection and recycling.

#### **4.4.8 Wooden One Way Pallets**

One way Euro pallets, which are used for some imported films and labels have been typically dumped to landfill, as they are of a different size to Australian Pallets, however investigations have revealed that these pallets can be repurposed by specialist pallet preconditioners. RROA will approach these preconditioners to further reduce land fill impacts

#### **4.4.9 Film and Label Core Recycling – Cardboard**

A new program has been initiated to collect and recycle cardboard film and label cores as part of the Coles Sustainability Program. Specialised bins have been provided to collect this cardboard in order to segregate them from general waste. Coles RROA is working with various recycling agencies to ensure the cardboard is both recycled appropriately and also to take advantage of the international market price movements in this very competitive sector.



Photo 3.3.9.1 – Label Store collection of cores



Photo 3.3.9.2 – Red Bin collection of cores



Photo 3.3.9.3 – Poultry core collection

#### 4.4.10 Shrink Wrap Recycling

Shrink wrap used to secure pallets of meat and empty crates at RROA has been previously dumped to landfill. A partnership with a recycler’s sustainability program has just been established to reduce landfill waste by over 8 cubic meters of waste per week. RROA will bale all the shrink wrap and the recycler will pick these up and recycle these in their nearby plastics recycling plant with an expected commencement date of late Feb 2021. Cost of collection and baling will be fully offset by the payment for the plastic by the recycler’s rebate.

#### 4.4.11 Film Offcut Recycling

The majority of packing at RROA is in the form of trays made by RROAs’ Multivac thermoforming machines using a co extruded PET/PE/Plant film material. The unique packaging material utilises plant-based barrier layer and recyclable PET, however, due the need for the Polyethylene layer, which is critical for sealing, the pack is not classed as fully recyclable. Negotiations with the supplier have however succeeded in offcuts and edge cuts generated during the forming of the trays to be re-introduced into the film manufacturing process. Approximately 6 tonne of film per week is now being sent back to Plantic to be recycled, instead of being sent to landfill.

#### 4.4.12 Primals: Cardboard to Crates

RROA has conducted some limited trials in receiving red meat primal in washable plastic crates instead of cardboard. Initial trials have been successful, and a larger scale trial is being set up with a major red meat vendor to further explore this sustainability initiative, which will remove hundreds of tonnes of cardboard from the supply chain each year.

#### 4.4.13 Trim: Cardboard to FB4 Bins

As part of the elimination of cardboard program for Raw Materials, RROA is investigating the use of pallets for the transport of trim for product in vacuum bags for mince production. This will further support the elimination of cardboard, as well as speed up the debagging process.

#### 4.4.14 Water Usage reduction programs

RROA is now using rainwater captured on the roof for use in toilets and for watering garden beds saving approximately 27KL of water /week.

The pressure of town water used for cleaning has been reduced by 15 %, without compromising cleaning efficacy. This initiative has saved RROA over 50KL of fresh water each week, and reduced waste-water levels.

### 4.5 Potential new projects concepts & expanded co-innovation program

With the recent Coles acquisition of the Chef Fresh ready meals operations in Botany, Sydney, consideration by RROA to expand the co-innovation program more broadly across RROA & new meals solution operations has been proposed. Some initial concepts under development may be transferrable across RROA and meals solutions operations, including:

- A huge part of the new operation will likely be –
  - insights/trends driving priorities & focus areas,
  - new customers,
  - large export focus / footprint,
  - new channels to markets / new business models,
  - new tech / sensing,
  - integrity systems,
  - new products / packaging – in meal solutions
- RROA R&D co-innovation team are assisting in developing skills & capabilities in the new operations
- RROA requesting MLA assistance in expanding skills and capabilities into the Chef Fresh business
- There may be a proposition to run a concurrent co-innovation program across the meals solutions business (subject to Coles & MLA input)

Here's a summary of some of the new project concepts that we discussed (subject to further input from RROA, Coles & MLA's Program Managers):

- Co-botics solutions in red meat processing applications [Initially Phase 1 is proposed with a specific focus on packaging and handling product with pilot demonstrations scheduled at RROA as part of the current project (P.PSH.2015) that is now approved by MLA and ready for RROA signing]
- AI & sensing applications (for automated tasks, product verification, detection of contaminants, traceability / authenticity, etc)
- Materials handling and (potentially automated) load out solutions
- Labels & products verification
- Manual assist for specific (tedious) operator / processing tasks
- Integrity systems (including Lumachain and/or other integrity systems' providers with similar solutions) with potential applications (to be validated depending on the problem RROA is looking to solve):
  - Automated processing room traceability
  - Verification of batches and /or specific cuts and / or product type
  - Capturing & linking processing data to specific products & origins (raw materials)
  - Processing room efficiencies and product flows

- Tracking cuts/products to specific batches/orders and automating the paper trail and documentation to reduce human error and delays
- etc
- .....and many more

In addition to the project concepts that have been discussed, there may also be an opportunity to leverage off existing MLA activities with outcomes relevant to your operation(s), including:

- Priorities driven by insights & trends
- Creating value through data [building on the RROA Digital strategy & co-funded role (P.PSH.1160)]
- New markets including export & domestic, new customers and new channels to markets:
  - Delivery services models (“Last Mile Channels”) with current engagements with Australia Post, Amazons, eBay, etc.
  - Aged care meal solutions including red meat & delivery business models eg Aged Care 2025+ vision
  - Meal kit business models
  - Test beds for new concepts & new product development – eg Behind the Glass concept, stadium meal solutions, vending machines, etc
  - Centralised “Dark Kitchen” concept, whereby the proposition is to create centralised kitchen operation(s) that (upper high-end premium food service and restaurant) businesses can access & contract to replicate their menus including red meat as centre of plate
- AI / VR to speak to your customer on red meat meal solutions
- (Automated) Verification of product / batches / orders through data / digital
- MLA is currently finalising its automated materials handling & loadout strategy and having the opportunity to work collaboratively to include Coles’ processing operations priorities
- New products & innovative (sustainable) packaging solutions – and potentially leveraging off MLA’s high value foods program & initiatives

Considering the breadth and depth of ideas potentially transferable to Coles’ new meals solution operation, it may be possible that in addition to the RROA/MLA co-innovation that we consider wrapping these up under a concurrent Chef Fresh-MLA co-innovation program.

## 5 Success in meeting the milestone

Milestone 12 has been successfully achieved by continued support of the program through :

- Submission of Final Commercial and in confidence Report including recommendations for a possible stage 2, third party review of findings, impacts and outcomes from the program. Lessons learnt on innovation approaches, growth opportunities, successes, failures and surprises to be included in the public final report for industry release.

***In Milestone 12, Coles RROA has summarised the significant progress in the development of the co-innovation strategy, detailed the lessons learnt and made recommendations for possible stage 2 opportunities in the future.***

## 6 Achievements: Milestones 1-12 (December 2020)

The key focus of the initial phase Coles RROA High Value Foods Strategy Program has been to recruit the Co-Innovation Manager. An interim manager (Jordan McIntyre) was recruited internally to the business with a background in Retailer logistics and planning with more than 15 years’ experience with major retailers. Key areas of focus have included optimisation of NPD systems and procedures and familiarisation of current production systems. Specific areas of business improvement included:

- Completed in the initial phase (i.e. Quarters 1&2) was the recruitment and successful appointment of the Co-Innovation manager (Jordan McIntyre) who has demonstrated experience and market knowledge of retailer logistics and planning.
- In the initial 12 months of the program, Coles RROA has commenced the development of a company-based Innovation Strategy to underpin a portfolio of high value red meat growth initiatives and strategy.
- In conjunction with the Coles RROA Team, developed, evaluated and implemented design-led methods for New Product Development (NPD).
- Discussed with the team innovation idea generation and filtering and feedback processes with a specific focus on high value innovative services, products, processes, and packaging concepts.
- Developed a projects Excel spreadsheet that enables Coles RROA projects and pipeline concepts to be tracked providing financial oversight
- Developed and co-ordinated an agreed suite of insights and value-adding R&D/ innovation projects.
- Managed and monitored the expenditure and track benefits from outcomes generated from projects.
- Supported and provided coordination of Coles RROA value-adding project teams and others as required.
- Participated in the development and implementation of cultural change initiatives required across the business to deliver against innovation objectives as required.
- Participated and facilitated in independent cost benefit analyses as required.
- Assisted in developing and monitoring project and program performance indicators and other measures of impact as agreed with the Coles RROA Team.
- RROA R&D team participated in the MLA Co-innovation program evaluation (as a pilot)
- Evaluated new technologies with providers, including Frontmatec, Rapiscan and Cobotic manufacturer(s)
- Coles RROA are reviewing some new project concepts (as part of the RROA co-innovation program), some of which are potentially transferable to their newly acquired Coles meals solution business (Chef Fresh, located at Botany, also with a smaller existing operation in Melbourne)

A preliminary strategy on a page has been further developed awaiting approval from the newly formed Co-Innovation Program steering group. Once approved, it is anticipated that these will remain key areas of focus within Coles RROA's High Value Foods program and specific targets and measures of success for this will be developed. The High Value Foods program is to be adopted by the work group now formed around each of Coles RROA's priority areas.

Overall, in Quarters 1-6, Coles RROA has continued to make significant progress in the development of R&D process & NPD systems. Steering group consisting of Coles RROA and MLA was formed. The Co-Innovation strategy and priorities has been further refined awaiting steering group approval. A number of R&D opportunities have been identified and implemented to enhance Coles RROA's capability.

## 6.1 Completed Projects

- Coles RROA Insights2Innovation Strategy & Product Innovation Manager (P.PSH.1054)
- Evaluation of red meat in vacuum skin packed (VSP) on-board retail ready format (P.PSH.1005)
- Red meat waterjet cutting & fat trimming (P.PSH.0932)
- Identifying new markets and product opportunities in China – Coles RROA strategy development (P.PSH.1058)
- Polyentrapment in meat (P.PSH.1129)
- Coles RROA Digital value chain strategy development and Digital Officer (P.PSH.1160)
- Red Meat Mince Cooling by Liquid Nitrogen (V.RMH.0096)
- Red Meat Mince Cooling by Liquid Nitrogen commercial production validation (phase 2)
- Liquid Lock – Red Meat Trays – Soaker Pad Removal (V.RMH.0097)
- Evaluation of Cobotics in red meat packaging (P.PSH.2051)
- 3D Baler Arm Detection
- Automated Order Picking Solution (Robot8)

## 6.2 Proposed Stage 2 Initiatives / Activities:

Coles RROA Co-Innovation High Value Meats Strategy completed stage 1 development. As the program strategy evolved, specific R&D projects were developed, and additional resources to support these projects were assigned as required. Each individual R&D project was contracted via a separate schedule and attached to the Collaborative Head Agreement.

- Continue to review opportunity spaces and gaps in export markets, specifically Asian retail and institutional markets.
- Sustainability projects – recyclable packaging, reusable plastic trays, label etching/RFID tags, label liner recycling, one way pallets, primal crates, trim bins, packaging material yield.
- Product Label (Interactive) Authenticity
- Sustainable packaging to meet Export market future requirements e.g. paper VSP skin pack with 100% recyclable properties.
- Rapiscan X-ray scanning program (DEXA/MEXA)
- Vision Systems – Robot 8 bail arm detection, mezzanine bail arm detection, Polyentrapment vision algorithm augmentation with AI
- Fixed Weight Retail Meat Retail Packs
- Waterjet portioning implementing X-ray scanning of lamb portions and 3D robotic cutting paths
- Adaptation of X-Ray technology in quality assessment of red meat primals through pilot programs
- Develop capability for expansion into value added products
- Traceability technology evaluation (Lumachain etc)
- Co-botic project implementation
- Evaluation of an innovative processing technology for production efficiencies and cost savings in food processing including red meat (J20216); Project proposal submitted, under review.
- Continue to review new technologies with MLA and global solution providers.



### **6.3 Working Group:**

- The Collaborative Value-adding Co-Innovation Program has been overseen by a joint Coles RROA / MLA Steering Group and external resources as required. This collaboration allowed for a greater focus on growth opportunities that created and captured greater value than a sole focus on commodity meat/service alone would have provided. The innovation programs addressed consumer and customer needs and pain points rather than predominantly focusing on supply or technology. Specific focus was given to export market gaps.
- RROA – Larry Kavanagh, Patrick Youil, Jordan McIntyre, Mitch Crowe, François Tabbakh, Suvir Salins
- MLA – Richard Apps, Dean Gutzke, Darryl Heidke, Michael Lee

## 7 Conclusions & Recommendations

### 7.1 Conclusions

Milestone 12 has been successfully achieved by completion of :

- Contract execution – ACHIEVED
- Finalise position description, commence recruitment (Interim Co-Innovation Manager appointed) – ACHIEVED
- Form RROA / MLA steering committee consisting of Coles / RROA & MLA representation – ACHIEVED; and
- Commenced setting overarching goals, metrics and outline in the form of a draft Collaborative innovation strategy & key priorities – ACHIEVED
- Develop strategic portfolio of growth opportunities in “value add/insights” theme – ACHIEVED
- Manage collaborative R&D projects in this theme – ACHIEVED
- Review and provide input into new R&D proposals – ACHIEVED
- Track and report on quantifiable benefits of Coles RROA projects – ACHIEVED
- Participate in internal and external networks to accelerate outcomes – ACHIEVED
- Action steering committee tasks – ACHIEVED
- Submitted Quarterly Reports including details of study tours, development of new innovative products, packaging and processes, skills development, participation in innovation networks and a program review by Coles RROA and the MLA.
- Submitted Final Commercial and in confidence Report including recommendations for a possible stage 2, third party review of findings, impacts and outcomes from the program. Lessons learnt on innovation approaches, growth opportunities, successes, failures and surprises to be included in the public final report for industry release.

In Milestone 12, Coles RROA has summarised the significant progress in the development of the co-innovation strategy, detailed the lessons learnt and made recommendations for possible stage 2 opportunities in the future.

### 7.2 Recommendations

The project proposes that Milestone 12: Final Report, be accepted and a final industry workshop with Coles RROA and MLA senior management be delivered to provide the final project update.

Coles RROA will be continuing the innovation initiatives as detailed in section 6.2 Proposed Stage 2 Initiatives / Activities. These projects will be best served by a continued partnership with the MLA to provide adequate and sustained funding to ensure they are completed in the best possible timeframe and generate valuable benefits to both Coles RROA and the wider Red Meat Industry.

## 8 APPENDIX - Supporting Documents

### 8.1 Appendix 1 Coles Group - Vision, Purpose & Strategy

