



Final report

Argyle Case Study for the Development and China Launch of Chilled Retail Ready Australian Meat (Stage 2)

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Prepared by: Chris Moore, Lachlan Graham
Argyle Prestige Meats

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Meat and Livestock Australia Limited
PO Box 1961
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Abstract

This MLA Donor Company (MDC) co-funding project builds on Meat & Livestock Australia's (MLA) initial project "V.RMH.0005 Farm Gate to Plate – Preliminary Study of Argyle China Retail Ready Solution" (see: <https://www.mla.com.au/research-and-development/reports/2020/farm-gate-to-plate--preliminary-study-of-argyles-china-retail-ready-solution/>).

The purpose of this stage 2 project is to capture key lessons learned in the development and sustainability of an end-to-end supply chain for the Australian red meat business into China. Market Research of Chinese consumers acceptance with Australian red meat was also conducted. Argyle Foods Group Pty Ltd, has developed a 'Farm Gate to Plate' supply chain model for an initial 30 product range offer into China. A design led innovation method was adopted to explore the problem regarding supply, range and storage conditions and to converge on practical business outcomes to share with the Australian red meat industry.

Findings from the project include a description of value propositions for cold chain and supply chain integrity technologies which have been adopted by Argyle (both back to farm and forward into retail markets). Key consideration of customer desirability, industry feasibility and commercial viability for merchandising the branded product range are presented. Since the completion of this project, Argyle are continuing to explore other high valued export markets.

Argyle successfully completed project objectives in launching over 30 red meat products and securing six customer product ranges across China in over 400 stores. Subject to COVID-19 and market access implications, the forecast sales derived from this project is projected to go from 2,000 head equivalent and \$3M sales in 2021 to 15,000 head equivalent (and 2,400 MT) and \$115M in 2025. In addition to these projected sales, outcomes from this project can provide a case study for wider Australian red meat sector in designing and delivering an export supply chain.

Executive summary

Background

Australian chilled red meat attracts a premium over frozen red meat products in many export markets. However, the cost and therefore the end price required for Australian product in market is higher than most competing countries.

This project is about developing the cold chain and supply chain integrity technology (that is commercially viable), building Aussie brand recognition and building trust in Australian origin with foreign consumers. It is also about building integrity in value chains and information transfer to help educate consumers.

Key cutting and packaging specifications plus adoption of traceability solutions back to the farm were developed and implemented with optimal protocols.

The ability to hold frozen retail ready products with stable shelf life while stored adds value in addressing large sales uplifts. Consumer trends and retailer trends will quickly focus on the need for supply chain integrity and traceability back to source and safe packaging and shelf life.

Objectives

The overarching project was intended to create value for the red meat supply chain by:

- Demonstrating a digital traceability system for the red meat industry.
- Building a highly efficient retail ready range of beef products and improving the value chain to expand current meat offer with premium value-added suite of products. Secure several customer product ranges across China in over 400 stores.
- Demonstrating iterative learning by presenting a case study that investigates how to validate the Australian origin products and service value propositions and its product-market fit.
- Determining the value created and captured along the supply chain with a cost benefit analysis.

Methodology

Key assumptions were framed, and prototypes were developed and tested in market. Insights and key data were recorded to inform the case study's final report.

Coordinating with a group of professionals with expertise in the area that worked as a team and organised dedicated workshops, has provided a strategic direction and a wide overview while finding critical solutions and checking the progress for evaluating the achieved goals of this project.

Results key findings

- Improvement in Producing and Labelling for Chinese market was needed and was actioned after training
- When educating the consumers, the demand of the products grows
- With the correct development programs, more commercial opportunities for the brand arise
- Projected sales in 2021 of 2,000 head (\$3M) are forecasted to grow in 2025 to \$115M with 15,000 head (2,400 MT) – whilst taking into consideration the negative impacts on business from Covid-19. New Business channels have arisen as a reaction to the pandemic, namely

online platforms. Strong growth in Carrefour Taiwan and Home + (e-commerce platform in Hong Kong) following imposed China restrictions during the project delivery timeline and impost in supplying China Walmart

- Argyle successfully launched over 30 beef products - completing the requirements of securing six customer product ranges across China in over 400 stores
- Increased supply chain efficiency, reduced wastage (Markdowns and dumps were ~25% of sales) which the Australian vertical producer must pay for to maintain ranging in retailer and increased market penetration (competition against other country products) were the keys to success from the project

Benefits to industry

The Benefits and implications to the Australian red meat industry from this project include:

- Case study describing securing the Value, Provenance, Safety and Authenticity of Australian Meat in export markets
- Product range and supply program underpinned by Biosecurity improvements through animal traceability and movements linked to an improved animal ID/NLIS system
- Asset Value measurement and protection in the supply chain to enable access to alternative and more efficient trade finance – in particular with imminent herd rebuild following sustained drought and negative cash flow implications on ability of producers restock – a demonstration linking a digital framework of production and sales demand.
- Case study demonstrating market interest for protected and improved market access for Australian red meat exports
- Initiate a producer led model for livestock trading, management, marketing and financing for net improvements across industry efficiency, value and sustainability.

Future research and recommendations

Implementation steps have been identified by Argyle to work with red meat supply chains to scope the development of a digital integrity system from uniquely identified cattle to final retail products.

A second phase is to enable improved finance on KPMG Origins due to the traceability platform providing financiers (or insurance) increased visibility to standardised and trusted inventory information.

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1. Background

Several Australian meat companies have been actively growing chilled export market channels in China. Over the past five years, China's sale growth for Australian product has been significant with at times almost 25% of all Australian beef export volumes to this market. The geographical proximity to China and the high quality of red meat makes the supply of chilled product the most competitive advantage Australia will have.

Argyle have found that chilled red meat attracts a premium over frozen red meat products. As Chinese consumer's income available for premium food products have increased, their demand for chilled meat has increased. This chilled market segment is the opportunity that Australia can be most competitive in if cold chain distribution challenges can be overcome.

The cost and therefore the end price required for Australian product in market is higher than most competing countries. This requires some sort of competitive differentiation. However, the cold chain in China has not been well developed yet, the cost of distribution is significant and the perception of Chinese consumers for beef quality has been traditionally low, although significant increase in demand for high quality product is changing their expectations.

Chilled retail pack development is facing distribution issues, smaller "last mile" volumes due to the smaller niches and fragmented channels, higher logistics costs due to high ordering frequency and small order amounts, as well as the limited product life, restrict country wide distribution. As a result, the average prices for chilled retail packs in the meat cabinet have doubled prices of similar retail packs in the freezer. Evidence of reduction in sales volume and subsequently per unit price of chilled product due to high distribution costs has resulted in overpriced finished products eroding value and volume.

The increase in volume and value of chilled red meat peaked in 2018-2019, but it has decreased since then, due largely to the lack of chilled cold chain logistics in China, resulting in higher product wastages and reduced quality. The waste, markdowns and dumps at retail are being passed back to Australia to bear the cost to maintain ranging on the retail shelf.

The demand for premium products is not matched by cold chain capability to supply. This clear gap in supply is the opportunity space for the Australian industry.

This project is about developing the cold chain and supply chain integrity technology (that is commercially viable), building Aussie brand recognition and building trust in Australian origin with Chinese consumers. It is also about building integrity in value chains and information transfer to help educate consumers.

Argyle Foods Group is a vertically integrated food producer that is targeting the China "fresh and value added" retail market. In the preliminary study [V.RMH.0005 - Farm Gate to Plate – Preliminary study of Argyle's China retail ready solution](#), Argyle demonstrated that the frozen-thawed red meat product range is a case study of how Australian red meat can be better managed through the cold chain by staying frozen until thawing at point of sale. This model gives retailers a simple and profitable supply of traceable, branded chilled red meat that has good colour, extended shelf life and minimal shrinkage without the complications of an underdeveloped refrigerated supply chain.

Namely, this MLA Donor Company project upscaled the ‘frozen-thawed model’ for Argyle Australian branded case ready meat into initially 385 Walmart stores with further opportunities thereafter.

Key cutting and packaging specifications plus adoption of traceability solutions back to farm were developed and implemented with optimal protocols to deliver desired shelf life (including colour retention from tempering during display; and reduced shrinkage and markdowns) validated in a commercial mode. The roll-out of retail ready packs also seeks to reduce the reliance on training multiple butchers as the cutting and packaging will be centralised – providing an opportunity for improved consistency and tie-up of Australian product and value capture than the current mode of bulk primals exported to China from both Australia and other countries.

The outcomes of this project developed new knowledge that further builds on MLA’s ‘Insights2Innovation’ program and past investments into China Attractive Cities profiling and Food without Fear consumer and market insights and technology advancements into track and trace integrity systems. In addition to the wider industry benefit, the immediate benefit to Argyle securing a launch into 385 Walmart stores is forecasted to grow to 2,400 MT and \$115M sales in 2025 respectively.

2. Objectives

The overarching project was intended to create value for the red meat supply chain by:

- Developing and implementing a digital traceability system throughout the supply chain that addresses China’s “Food without Fear” desire (see: past MLA research - <https://www.mla.com.au/download/finalreports?itemId=3644>) and delivers a trusted product of Australian origin.
 - The supply chain of the red meat industry has started to be developed in a blockchain based provenance track and trace platform.
 - The first prototype was led by Walmart compliance team, who designed the function, mode and features for full scalability to their clients.
 - Due to the unexpected restrictions of the China imports, the pilot had to pivot focusing on Carrefour Taiwan and Home + (e-commerce platform in Hong Kong).
 - In collaboration with KPMG, Argyle has advanced now mapping out the journey of the products that are being exported to Taiwan in a system that runs with blockchain technology.
- Building a highly efficient retail ready range of products and improving the value chain to expand current meat offer with premium value-added suite of products.
 - Argyle has successfully secured six different customers within the China market, supplying each of them with an individual product range and branding.
 - Product specifications have been approved for all ranges with the shelf-life validated through an MLA Shelf-Life Prediction Model Interim Report from UTAS on frozen and frozen-thawed products (see: <https://foodmag.com.au/how-keeping-track-of-meat-leads-to-longer-shelf-life/>).
 - The processes outlined in the specifications had to be gradually refined in order to improve the equipment and systems involved.
- Demonstrating iterative learning by presenting a case study that investigates how to validate the Australian origin products and service value propositions and its convenient market fit.

Researching drivers for technical feasibility and commercial viability in pursuing the global market with a retail ready business plan.

- The key lessons learnt were mainly based in the need of implementing Production Improvements with producers and applying Communication and Educational Tools for retailers and consumers.
- Due to Covid-19 impacts and the restrictions to keep supplying China market, there was not enough time to complete the investigation and explore the results that were going to be presented as the trend was showing and on a normal scenario.
- Determining the value created and captured along the supply chain with a cost benefit analysis.
 - A feasibility study demonstrated reduction in costs to the supply chain which gives a solid advantage over supplying from other countries and a financial benefit to build a large retail chilled red meat shelf presence in China.
 - Volume growth proven over a 6-month period demonstrated that consumer acceptance of the new product remains stable.
- Presenting a Business Plan with a forecast sales plan listing volume and sales for retail ready China market against a baseline from the start of this project.
 - The project demonstrated that the market penetration of the Australian products was well accepted in China.
 - A retail ready supply chain model in Australia through NCMC, (The Northern Co-operative Meat Company Ltd processing facility) will not be completely fulfilled with the amount of production that the Chinese market could demand in this period.
 - Because the consumer focus changed considerably post Covid-19, another sale forecast will have to be projected and new measures will need to be implemented to keep up with the estimated growth.

3. Methodology

Key assumptions were framed and prototypes were developed and tested in market. Insights and key data were recorded to inform the case study's final report. Demonstrating iterative learning by presenting a case study that investigates how to validate the Australian origin products and service value propositions and its convenient market fit was completed. Researching drivers for technical feasibility and commercial viability in pursuing the global market with a retail ready business plan was captured using tools such as business model canvas and value proposition canvases.

3.1 Project Team and Team Meetings

A working group completed a series of workshops to share knowledge and ensure the alignment of their strategic direction whilst checking the progress for evaluating the achieved goals of this project. The critical "pivot" decisions included commercial and research design inputs to ensure that they met MLA's requirements across validating Desirability – Feasibility – Viability assessments and align the development and oversight of the implementation of the project strategies and plans.

Table 1: Project team and team members

Role	Name	Organisation
Exec Reviewer / Governor	Michael Lee	MLA
	Andrew Cox	MLA
Project Admin	Karla Franklin	MLA
	Taleah Mcpherson	APM
Project Leader	Lachlan Graham & Emmy Li	APM
Team Members		
<i>NPD & Process Spec Report Related</i>	Emmy Li & Taleah Mcpherson	APM
	Taleah Mcpherson Contractor	APM Greenleaf
<i>Commercial & Marketing</i>	Bryce Graham Shelly Tan	APM (HK) DCH
<i>Traceability</i>	Chris Moore	APM
<i>Logistics</i>	Gary Man Shelly Tan	APM (HK) DCH

3.2 Collaborative marketing activities with DCH and retailers

Extracting Information from 'DCH Instore Demo Reports' and collaborating with DCH and retailers to encourage consumer confidence and deliver customer focused solutions for red meat in stores.

- To test assumptions within market trials and consumer feedback,
- To continually improve the performance of the red meat category by informing consumer outcomes as a result of market feedback,
- To conduct a customer study and market insight in conjunction with Walmart and Ole to demonstrate the effectiveness of customer centric Research and Development and future growth strategy.

3.2.1 Promotion Strategy

The following is a brief snapshot as of December 2020:

Walmart:

Growth phase: Market acceptance stage -> Intensive distribution and promotion, achieving Brand Preference. Promotion is aimed at a broader audience.

Ole:

Introduction phase: Product launched into the market -> Scattered distribution and extensive promotions for the Category Awareness. Marketing communication seeks to build product awareness and to educate potential consumers about the product.

Table 2: Instore cooking demonstration and sampling planned

Retailers	Promotion Month	Store Numbers	Promotion Frequency	Promotion Days
Walmart	August	5	3days Weekly	12
Walmart	September	5	3 days Fortnightly	6
Walmart	October	10	2-3days Weekly	7
Walmart	November	5	3 days Fortnightly	5
OLE	November	7	3days Weekly	7

Walmart: Instore cooking demonstration and sampling program in 17 Walmart stores, has promoted products and increased sales significantly.

Figure 1: Instore Demo in Walmart Stores



Ole: Entered the market in October and arranged promotions in November 2019, which played a positive role in promoting products in initial 7 OLE stores. The monthly sales data reached above the forecasted in November and it enhanced the brand awareness.

Figure 2: Instore Demo in Ole stores



Beef attributes described to understand if consumers accepted Argyle product characteristics, and if there were any improvement that would have to be needed to know:

- ✓ Freshness: *Not fresh, Stale, Mostly fresh, Very fresh*
- ✓ Colour: *Brownish, Reddish, Brown Reddish*
- ✓ Price per kg (unit): *\$25, \$20, \$15*
- ✓ Healthfulness: *High in fat, Medium fat, Low in fat*
- ✓ Convenience: *Not very easy to cook (thick cuts), Quite easy to cook (just right cuts)*

Semi structured interviews used to investigate consumer purchasing behaviour:

- *"I noticed you purchased / did not purchase this product - can you let me know what you were looking for to make your decision?"*
- *"You were looking at an Australian Meat product - did you find the information you needed about the Australian country of origin?"; "What information was / was not of value?"; "Why is country of origin important to you?"*
- *"Can you tell me how you will be cooking this meal / when will it be cooked?"; "Has the product provided the information you require?"*

3.3 Design Led Thinking Tools

Design Led Thinking tools help identify, understand and address the problems that businesses and their customers face. They enhance solutions, processes, creativity and innovation. A list of assumptions, preliminary insights and propositions were added into a Business Model Canvas tool. A Value Proposition Canvas considering key trends and forces for the China market and retail ready meat offer was used in the methodology of the project.

3.3.1 Business Model Canvas

A Business Model Canvas is a framework that helps business modelers, strategists, entrepreneurs as well as managers determine how a business creates, delivers and captures values. It is used to:

- Define preliminary ‘where to play and how to win’ strategy
- Display desirability – viability – feasibility criteria

Figure 3: Business Model Canvas

Business Model Canvas				
Designed for: Argyle China assumptions		Designed by:	Date:	Version:
Key Partners Who are our Key Partners? Who are our key suppliers? Which Key Resources are we acquiring from partners? Which Key Activities do partners perform? MOTIVATIONS FOR PARTNERSHIPS: Optimization and economy, Reduction of risk and uncertainty, Acquisition of particular resources and activities	Key Activities What Key Activities do our Value Propositions require? Our Distribution Channels? Customer Relationships? Revenue streams? CATEGORIES: Production, Problem Solving, Platform/Network Key Resources What Key Resources do our Value Propositions require? Our Distribution Channels? Customer Relationships Revenue Streams? TYPES OF RESOURCES: Physical, Intellectual (brand patents, copyrights, data), Human, Financial	Value Propositions What value do we deliver to the customer? Which one of our customer's problems are we helping to solve? What bundles of products and services are we offering to each Customer Segment? Which customer needs are we satisfying? CHARACTERISTICS: Newness, Performance, Customization, "Getting the Job Done", Design, Brand/Status, Price, Cost Reduction, Risk Reduction, Accessibility, Convenience/Usability	Customer Relationships What type of relationship does each of our Customer Segments expect us to establish and maintain with them? Which ones have we established? How are they integrated with the rest of our business model? How costly are they? Channels Through which Channels do our Customer Segments want to be reached? How are we reaching them now? How are our Channels integrated? Which ones work best? Which ones are most cost-efficient? How are we integrating them with customer routines?	Customer Segments For whom are we creating value? Who are our most important customers? Is our customer base a Mass Market, Niche Market, Segmented, Diversified, Multi-sided Platform
Cost Structure What are the most important costs inherent in our business model? Which Key Resources are most expensive? Which Key Activities are most expensive? IS YOUR BUSINESS MORE: Cost Driven (leanest cost structure, low price value proposition, maximum automation, extensive outsourcing), Value Driven (focused on value creation, premium value proposition). SAMPLE CHARACTERISTICS: Fixed Costs (salaries, rents, utilities), Variable costs, Economies of scale, Economies of scope		Revenue Streams For what value are our customers really willing to pay? For what do they currently pay? How are they currently paying? How would they prefer to pay? How much does each Revenue Stream contribute to overall revenues? TYPES: Asset sale, Usage fee, Subscription Fees, Lending/Renting/Leasing, Licensing, Brokerage fees, Advertising FIXED PRICING: List Price, Product feature dependent, Customer segment dependent, Volume dependent DYNAMIC PRICING: Negotiation (bargaining), Yield Management, Real-time-Market		

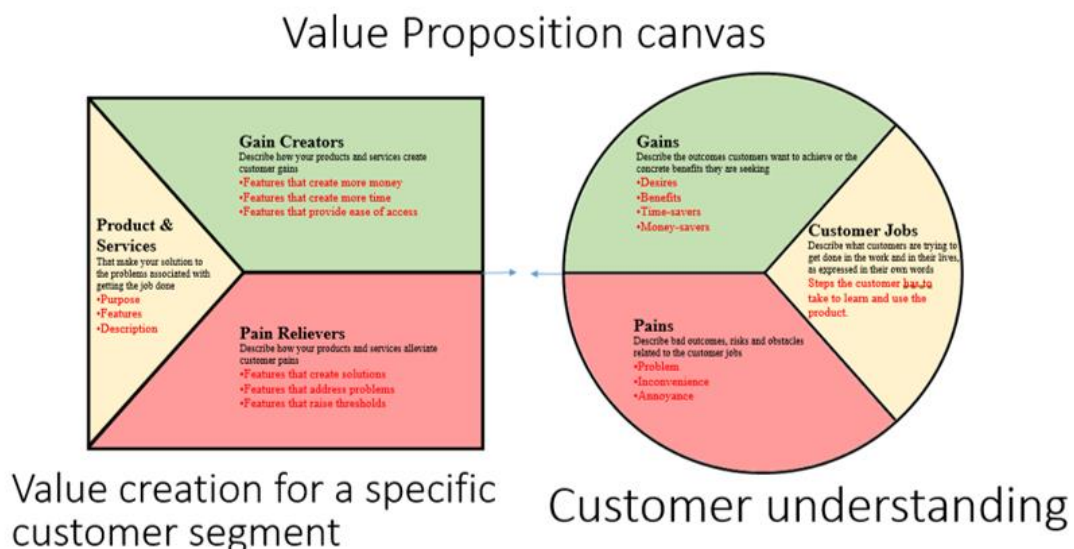
Designed by: The Business Model Foundry (www.businessmodelgeneration.com/canvas). Word implementation by: Neos Chronos Limited (<https://neoschronos.com>) License: CC BY-SA 3.0

Source: The Business Model Foundry (www.businessmodelgeneration.com/canvas).

3.3.2 Value Proposition Canvas

Value Proposition Canvas is a powerful tool that helps identifying all the benefits the product offers, describing what makes these benefits valuable, identifying the customer's main problem, connecting this value to the buyer's problem and differentiating the company as the preferred provider of this value. Canvases were prepared for different retailers and shared in confidence with MLA separate to this report.

Figure 4: Value proposition canvas



Source: The Business Model Foundry (www.businessmodelgeneration.com/canvas).

3.4 Cost Benefit Analysis

Quantifying the volume and value created and captured along the supply chain while processing Australian red meat into Argyle's retail ready range sold in China.

3.4.1 Scoping

Scope of business needs to be understood for modelling:

- Overview of structure of Argyle, other stakeholders in chain and relationships which were required for determining how value passes back to producer sector in determining overarching program ROI
- Understanding the longer-term objectives for Argyle and how this current project work will help enable wider value creation. For example:
 - How does Argyle's existing process and supply chain leverage extra value/market control/distribution channel control etc. by integrating meat from other Australian origins into Argyle's unique supply chain
 - What challenges are limiting the meeting of demand in China and how is this project overcoming those challenges
- How does digital information currently flow in Argyle's supply chain and how could it flow in future. What will be the perceived value for these future capabilities

3.4.2 Data gathering – preparing analysis

The following data was gathered to quantify the way in which challenges were overcome and the subsequent increases in value that resulted. The following is an example of the types of data that were used to support the value proposition:

- List of products, customers, sales prices, distribution costs, sales rates
- Benchmark data – what were sales before new products including:
 - Product lists and costs of production
 - Mark downs & dumps
 - Previous distribution reach, costs and barriers to growth
 - Mark-ups at each step in the chain
- Understand the strategic value propositions
 - Quantifying value already being created in this project to date
 - What opportunities could occur next? Greenleaf used other industry data to support this item.
- Review assumptions and data details with Argyle

3.4.3 Business modelling / value creation

The business modelling used the data provided to quantify the volume and value created and captured along the supply chain in transforming Australian red meat inputs into Argyle's retail ready range sold in China, including:

- Develop a supply chain model that reflects Argyle's supply chain through to end consumer
- Include various service providers / partners portions of the supply chain.
- Quantify the value creation and opportunities for further per unit value, sales growth, product extension growth etc.
- Map future project milestone deliverables. Include forecast future numbers.

Sales forecast up to 2025 were included by sales channel to determine benefit: cost ratio and \$/kg return.

Cost Benefit Analysis to includes Argyle value chain and learnings and modelling for wider Australian industry.

3.5 Digital Traceability - Blockchain

A pilot phase of Digital Traceability of the products was led by Walmart compliance team intending to capture and reflect the paddock-to-plate journey, biosecurity, farm specifics, breed specifics, etc.

Features:

- Splash Screen
- QR Code Scanner
- Scan Result

Scope of Walmart traceability platform:

- Farm data points: Farm name, manager, PIC code and address, ear tag, livestock breed, feeding type.
- Processing plant: Food safety test results, report on some key items, such as testing for antibiotics or illegal drugs, government animal inspection and quarantine certification.
- Transportation data locations.

4. Results

4.1 Retailers and Product Range

4.1.1 Initial Product Range, Target Market and Key Product/Brand Features

Argyle has successfully completed the requirements of securing six customer product ranges across China in over 400 stores. Each customer had an individual target market, integrity systems and key product / brand features across their product range. Product specifications had been drafted and approved for all ranges with the shelf-life validated through an MLA Shelf-Life Prediction Model Interim Report from UTAS on frozen and frozen-thawed products.

The design plan for the Blockchain System has started, as well as operating procedures for the freeze/thaw process.

Customer № 1: Walmart China

Product Range:

- Beef Oyster Blade Steak 180g

- Beef Striploin Steak 180g
- Beef Chuck Roll Steak 180g
- Beef Cube Roll Steak 160g

Argyle launched four products in the Walmart China range under the “Healthy Farmer” brand. This range uses budget beef with four popular cuts. The striploin and cube roll steaks have the highest price point within the range, with the cube roll having a slightly reduced pack size to match the unit price of the striploin. The Oyster Blade and Chuck Roll are the cheapest within the range. Budget, HGP-Free Beef is used in this range to keep the individual unit prices low, targeting value shoppers whilst remaining competitive with other exporting countries. The HGP-Free claim is advertised in store to target many consumers who are now taking ethical and environmental impacts of products into consideration when selecting their food. This claim is used as a brand feature, promoting high quality Australian beef that is free of hormones. The frozen-thawed model allows this range to be the only chilled exported beef on the shelf. This model allows this range to be kept at a very low cost and successfully target value shoppers. Weekly in-store demonstrations are used to interact with customers and provide samples, recipes and recommendations. This has proven to significantly increase sales by increasing brand awareness and generating excitement around the product range. Argyle’s Healthy Farmer range was in 217 Walmart stores with regular sales and in-store promotions, with an expansion to 300+ stores in 2021, as well as 2 new DCs subject to market access.

Customer No 2: SF Best

Product Range:

- Beef Chuck Steak 130g
- Beef Cube Roll Steak 130g
- Beef Striploin Steak 130g

Argyle launched three products in the SF Best range under the “Besterigo” brand. This range uses budget beef with small individual pack sizes to target time-poor value shoppers. This range is sold online, assuming the typical customer does not have the time to shop in-store. The small pack size of 130g not only keeps the unit price down, but also provides steaks that cook quickly and do not require further preparation. This range uses the Frozen-Thawed model, allowing this range to be the only exported range sold chilled. The Frozen-Thawed model reduces logistical costs by increasing shelf-life, thereby reducing the cost to the customer. This model allows this range to be kept at a very low cost and successfully target value shoppers. The Besterigo range was in 100 SF Best stores, expanding to 300 stores in 2021 subject to market access.

Customer No 3: Miss Fresh

Product Range:

- Beef Chuck Steak 130g
- Beef Outside Flat 130g

Argyle launched two products in the Miss Fresh range under the “Eight Mile” brand. This range is Argyle’s cheapest range, using secondary cuts of budget beef with small pack sizes to keep the individual unit price very low. In this range, recipes are provided on the back of each pack for tenderising the beef before cooking. This educates the consumer on how to utilise cheap secondary cuts of beef that they may not typically purchase. This budget range targets value-shoppers and provides both an opportunity to utilise secondary cuts of beef, as well as encourage those on a

tighter budget to enjoy quality Australian beef. The Eight Mile range is in 1500 warehouses in China on 20 cities and 50 million customers with Miss Fresh. This range will launch in Southern China in 2021 and expand to all DC's subject to market access.

Customer № 4: Carrefour Su Ning Frozen-Thawed

Product Range:

- Beef Chuck Roll Steak 180g
- Beef Striploin Steak 180g
- Beef Cube Roll Steak 180g
- Beef Rump Steak 180g
- Beef Oyster Blade Steak 180g

Argyle launched five products in the Carrefour Su Ning Frozen-Thawed range sold under the customer's own branding. This product range uses budget beef but is sold as a middle-tier range to demonstrate high quality Australian beef, as well as to place the range above those of other exporting countries and local beef. With the Carrefour Su Ning range using the customers own labels and branding, Argyle ensures high quality compliant material is used to guarantee all marketing and labelling claims are met. The frozen-thawed model allows this range to be the only exported beef sold chilled in-store. The Frozen-Thawed model reduces logistical costs by increasing shelf-life, thereby reducing the cost to the customer. The Su Ning Frozen-Thawed range was in 49 Carrefour stores, expanding to 240 stores in 2021 subject to market access.

Customer № 5: Ole China

Product Range:

- Angus EQG Oyster Blade Steak M2+ 200g
- Angus EQG Striploin Steak M2+ 200g
- Angus EQG Ribeye Steak M2+ 200g
- Angus EQG Short Rib M2+ 200g
- Beef Oyster Blade Steak 180g
- Beef Ribeye Steak 180g
- Beef Striploin Steak 180g
- Beef Wagyu Striploin Steak M4+ 200g

Argyle launched eight products in the Ole China range under three brands: Argyle Signature, 2 Farms and Willow Green. The different brands are used to distinguish between the three ciphers: Angus EQG, Grass Fed and Wagyu Beef. The Angus EQG products are sold under the "Argyle Signature" brand as the premium range. The 200g pack size of each product ensures a thicker steak for a higher quality product. The Grass Fed products are sold under the "2 Farms" brand, the cheapest products of the Ole Chian premium range. The slightly smaller pack size of 180g allows a reduced unit price to target value shoppers. The Wagyu Striploin is the most expensive product in the range, sold under the "Willow Green" brand. The 200g pack size was chosen to prevent the packing of thin steaks that would detract from the premium branding. Black is the predominant colour used on the Willow Green label to represent sophistication and premium quality of this product. The frozen-thawed model allows this range to be the only exported beef sold chilled in Ole China. The Frozen-Thawed model reduces logistical costs by increasing shelf-life, thereby reducing the cost to the customer. This range is sent with 8 packs per inner carton, with each store receiving one carton to store in freezer and thaw for use. The small carton size prevents build-up of frozen stock in-store and ensures the customer limits wastage from expired product. The Ole China range is in 16 stores in

Southern China, expanding to 77 stores in 2021 with planned in-store sales and tasting promotions subject to market access.

Customer № 6: Carrefour Shanghai CQL

Product Range:

- Beef EQG Chuck Roll Steak 180g
- Beef EQG Striploin Steak 180g
- Beef EQG Cube Roll Steak 180g
- Beef EQG Tenderloin Steak 180g
- Beef EQG Eye Round Steak 180g
- Beef EQG Bone-In Short Rib 180g
- Beef EQG Intercostals (Rib Finger) 180g
- Beef Grass Fed Striploin Steak 700 – 800g
- Beef EQG Cube Roll Steak 700 – 800g
- Beef EQG Tenderloin Steak 500 – 800g
- Beef EQG Brisket PE 500 – 700g
- Beef EQG Rump Steak 500 – 700g
- Beef EQG Conical Shin 300 – 600g

Argyle launched thirteen products in the Carrefour Shanghai CQL range sold under the customers own brand “CQL”. Angus EQG Beef is used for this premium chilled range. With the customer using their own labels and branding, Argyle ensures all raw material supplied is of high quality and compliant to all label and marketing claims used. This range does not use the Frozen-Thawed Model as it does not fit within their branding strategy. This range includes both individual steak and catch weight bulk packs of Angus EQG beef. This range is targeted at both individual value shoppers and families that may prefer to purchase large volumes at a lower cost. The CQL range is scheduled to launch into further 240 stores in 2021 subject to market access.

Carrefour Taiwan

Description	Pack size
Angus Grass Fed Tenderloin Steak 2x100g	200g
Angus Grass Fed Ribeye Steak 200g	200g
Angus Grass Fed Striploin Steak 200g	200g
Angus Grass Fed Rump Steak 200g	200g
Angus Grass Fed Short Rib Meat Steak 200g	200g
Beef Tenderloin Steak 2x100g	200g
Beef Ribeye Steak 200g	200g
Beef Striploin Steak 200g	200g
Beef Rump Steak 200g	200g
Beef Short Rib Meat Steak 200g	200g






Argyle launched ten products in the Carrefour Taiwan CQL range sold in the Diamond G brand for non CQL beef and under Carrefour’s CQL own brand “CQL” for Angus Grass fed. All product is packed and sent chilled by air freight every two weeks. With the customer using their own labels and branding, Argyle ensures all raw material supplied is of high quality and compliant to all raising and

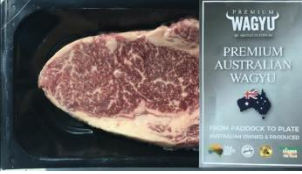





marketing claims. This range does not use the Frozen-Thawed Model as it does not fit within their branding strategy. This range includes fixed weight SKUs all set at 200g targeting health-conscious customers and families that care about quality and traceability. Carrefour recently acquired Wellcome (Dairy Farm Group) and now has in excess of 500 stores in Taiwan.

Home+ (e-commerce platform in Hong Kong)

Argyle launched 27 products on Home+ in Hong Kong in the Argyle brand in November 2020. Products range from grass fed to grain fed and premium Wagyu from MB3 up to MB9+ in most SKUs. Products range from steaks, to burgers, mince, stir-fry, hot pot, kebabs and diced beef. Product is packed in Australia and sold frozen. Argyle ensures all raw material supplied is of the highest quality and compliant to all label and marketing claims used. This range is targeted at health-conscious customers and families that care about health, quality and have an appreciation for high marbled product as well. Home+ is the latest major e-Commerce platform in Hong Kong and is run by HKBN the second largest internet platform in HK with direct digital access to over 4 million homes. Argyle is the exclusive supplier of Australian Beef and lamb.

DESCRIPTION	PACK SIZE
Wagyu M3+ Striploin Steak	200g
Wagyu Beef Diced	200g
Wagyu M4+ Sirloin Steak	250g
Wagyu M4+ Ribeye Steak	250g
Wagyu M9+ Sirloin Steak	250g
Wagyu M9+ Ribeye Steak	250g
Grass Fed Rib Eye	190g
Grass Fed Sirloin	190g
Grass Fed Beef Mince	250g
Grass Fed Beef Stirfry	250g
Angus Burger Patties	150g
Wagyu M9 Short Rib Hot Pot Slice	150g
Wagyu M9 Hot Pot Slice	200g
Wagyu Shin Shank Hot Pot	200g
Wagyu M9 Stirfry	200g
Wagyu M9 Diced	200g
Grass Fed Oyster Blade Steak	190g
Sirloin Steak with Pepper & Herb Crust	400g
Marinated Wagyu Kebabs	300g
Wagyu M4+ Hot Pot Slice	200g
Wagyu Chuck Roll Diced	200g
Wagyu Chuck Roll Slice	200g
Grass Fed Rump Steak	180g
Wagyu M3 Tenderloin Steak	300g
Wagyu M6-7 Hot Pot Slice	200g
Grass Fed Beef Mince	500g
Grass Fed Bolar Blade Steak	400g

PRODUCT	DESCRIPTION	PACK SIZE
	Wagyu M3+ Striploin Steak	200g
	Wagyu Beef Diced	200g
	Wagyu M4+ Sirloin Steak	250g
	Wagyu M4+ Ribeye Steak	250g
	Wagyu M9+ Sirloin Steak	250g

	<p>Wagyu M9+ Ribeye Steak</p>	<p>250g</p>
	<p>Grass Fed Rib Eye</p>	<p>190g</p>
	<p>Grass Fed Sirloin</p>	<p>190g</p>
	<p>Grass Fed Beef Mince</p>	<p>250g</p>
	<p>Grass Fed Beef Stirfry</p>	<p>250g</p>
	<p>Angus Burger Patties</p>	<p>150g</p>



Wagyu M9 Short Rib Hot Pot Slice 150g



Wagyu M9 Hot Pot Slice 200g



Wagyu Shin Shank Hot Pot 200g



Wagyu M9 Stirfry 200g



Wagyu M9 Diced 200g



Grass Fed Oyster Blade Steak 190g



Sirloin Steak with Pepper & Herb Crust 400g



Marinated Wagyu Kebabs 300g



Wagyu M4+ Hot Pot Slice 200g






Wagyu Chuck Roll Diced 200g



Wagyu Chuck Roll Slice 200g



Grass Fed Rump Steak 180g

	<p>Wagyu M3 Tenderloin Steak 300g</p>
	<p>Wagyu M6-7 Hot Pot Slice 200g</p>
	<p>Grass Fed Beef Mince 500g</p>
	<p>Grass Fed Bolar Blade Steak 400g</p>

4.1.2 Product Specifications and Refinement

Argyle has completed Product Specifications for every product within each range, which have been approved, signed and stored in the NCMC System to use during production. The processes outlined in the specifications have been gradually refined in response to improved machinery or systems. Darfresh® (Vacuum skin packaged) steaks were originally hand-cut at NCMC, allowing a 10 – 12% giveaway. Since the initial production, a Marel I-Cut® slicing machine has been introduced into the factory to improve the efficiency and accuracy of production, decreasing the giveaway to 7 – 10%. All specifications were updated to reflect this process. A crusting and Puma machine have also been introduced into processing at NCMC, used to improve the presentation of individual steaks. This process achieves a 2 – 5% giveaway, as well significantly improves the consistency of presentation for customer satisfaction. This process has also been included in relevant specifications. Products such as Chuck Roll (shown) benefit from this process, ensuring a consistent uniform shape in every production.

Figure 5: Example of Product Packaging



4.1.3 Shelf-Life Validation

A separate MLA study was conducted at the University of Tasmania (UTAS) to evaluate the shelf life of frozen beef products during thawing and storage at 4°C by organoleptic and microbial assessment. Argyle provided sample product towards this study. Various types of beef were packed and subjected to a freezing process. The frozen products were transported overnight to UTAS by a commercial carrier using refrigerated transport (-1°C). The products were stored in a -18°C freezer for 30 days before thawing at 4°C and beginning the shelf-life trial. The shelf life of each product was determined from colour or odour assessment, as well as Total Viable Count (TVC).

The preliminary shelf-life of the products however did not meet industry expectation for their shelf life. Darfresh steaks were expected to meet a shelf life of 21 days, however in this study they achieved 13 – 19 days. The shorter shelf-life may have been due to the process of freezing and thawing that typically has a negative impact on the quality of products. The frozen beef was also transported using refrigerated transportation at -1°C, a temperature insufficient at keeping product frozen. This will have significantly reduced the shelf-life. This learning was crucial to build into future supply chain plans for export markets.

Further testing at NCMC validated the shelf-life of Darfresh Frozen-Thawed Beef at 21 days. For all frozen-thawed product ranges to China, Argyle uses a 12-month shelf-life when stored at -18°C and 21 days when stored at 0 – 4°C.

4.2 Capability Building with JV NCMC

Argyle has been successful in establishing with the processing company: The Northern Co-operative Meat Company (“NCMC”), a pre-packed meat range that suits the China retail markets, and an innovative supply chain model (frozen thawed), to be able to supply retail ready meat that is packed in Australia and then delivered to China retailers directly. The ‘frozen thawed model’ successfully transformed Australian red meat into a global-scaled value chain, providing China retailers that are not familiar with ranging and selling case ready beef products, a simple profitable solution of traceable, originally packed in Australia, branded red meat concept with the added benefit of:

- Good meat colour.
- Extensive chilled shelf life.
- Minimal shrinkage.
- Reduced complication – reduction in educated staff required to manage this new but rapidly
- growing category.

As a result, Argyle was offered a national launch into 385 Walmart stores, in addition to gaining many opportunities for further market expansion.

- SF Best (3rd largest on-line retail stores) - South China 300 stores trial with potential 1,000 stores nationally.
- Ole/BLT (high end boutique supermarket) - South China 65 stores trial with potential 250 stores launched nationally.
- Carrefour (4th largest retail store) - East China 80 stores trial with potential 230 stores nationally.

As part of the roll out plan, Argyle tested a number of assumptions in supplying Walmart China and other retail markets against series of China market insights and assumptions provided by MLA: (MLA Report -- Chinese

Customer Understanding Retail Ready Beef from Australia (Qualitative Research) by iLUX (2018) and MLA Report -- GLOBAL INDUSTRY INSIGHTS AND STRATEGY: Premium Australian beef opportunities in China (2019)) – in particular:

- Evaluating the concept of retail ready red meat that was “Originally Packed in Australia” – in appeal, uniqueness, relevance, credibility, concerns & questions, preferences on pack forms and sizes etc. All aspects considered.
- Observing shopping behaviour and purchase decision of beef; with focus on Australian beef particularly (channel selections and considering factors – e.g. brand, product safety, quality and authenticity, product variety, price, convenience, etc.).
- Build NPD pipeline and re-invent the SKUs that are not performing well.
- Build more sales momentum to support retail ready business case to further improve and investigate better eating quality and/or innovation of growing beef market.

However, with several restrictions on processing red meat products in Australia that are imposed on China-accredited export plants HS codes, this means that the Australian Government Department of Agriculture and Water Resources lists a number of meat products that are not eligible for export to China market relating to:

- Processed meat - the department reminds exporters that processed meats are currently not eligible for export to China. China defines processed meat products as meat that has undergone a method of processing including (but not limited to) salting, marinating, saucing, steaming, stewing, smoking, baking, roasting, drying, shaping, fermenting, etc. Processed meat products include meatballs, meat pies, sausage rolls, cured meat, canned meat and retorted meat. These requirements are outlined in the Manual of Importing Country Requirements (MICoR).
- Minced meat and trimmings - the department is not aware of specific restrictions imposed on Australian minced meat however there may be some risks associated with exporting trimmings and minced meat to China.

Therefore, to pursue these valuing added options, Argyle considered a different value chain design and developed several options for further processing chilled and frozen Australian Beef primals within value added facilities in China.

4.3 Establishment of In Market Processing Plant

Retail-ready production for the China market is currently a relatively small part of the Argyle business but having an in-market, retail-ready operation in China would provide logistical benefits in exporting primal cuts and then having the high-labour component of retail-ready production carried out locally in China where labour is less expensive. This in-market processing would also support consumer-focused production that is responsive to local consumer feedback. Having an in-market business partner as well as an office presence in Shanghai will also help protect chilled beef market access in this high-risk trading environment.

Argyle invited one of their existing distributors Kan Ao Foods (KAF) to visit Argyle's Bomaderry plant in September 2019 and to review the quality and supply drivers. KAF also owns a processing plant in China Shanghai where they process bulk packed beef cuts for hotels and restaurants. KAF reviewed Argyle's red-meat in-bound, load-out, cold storage, meat cutting and packing production lines to understand the end to-end processes involved from production planning through to finished goods despatch processes.

Argyle consulted KAF on processing equipment, production flow process, quality control measures and stage gate process in establishing their plant in order for Argyle to toll process for China retail distribution for both chilled and frozen products packed in MAP, Darfresh and thermoform packaging.

Argyle's shareholder, Dah Chong Hong (DCH) was privatised in December 2019 by its parent company Citic. Citic is completing construction of one of China's largest food processing hubs in December 2020. The food processing hub, located 1hr south of Shanghai, will be capable of processing 1000MT/week of finished raw red meat products and 1000MT/week of finished cooked red meat products. Argyle is proposed to be Citic's primary processing tenant launching an Australian supply chain further processed in china and distributed to China largest retail chains.

Due to the China market restrictions encountered with NCMC throughout 2020 Argyle took the same outlined approach for in market processing Hong Kong. Argyle is now further processing multiple Australian grades and cuts of beef into products not feasibly produced in Australia for export markets. These products are outlines in the project and include all types of Shabu Shabu hot pot and yakiniku products for distribution on the Home + and Argyle Black e-commerce platforms in the Hong Kong market. Many of the project learnings and outcomes of the China market have been successfully applied to the Hong Kong, Taiwan and USA markets post the market access restrictions on the China market.

4.5.1 Risk Identification

A key learning was that the risk management strategy for delivering the processing and food manufacturing facility will need to reflect the cultural and commercial environment in China. The design, construction and operational phases of the project will require assessment and management to ensure that all relevant risks are controlled in a manner suitable for all parties of the Joint Venture. It was found that the following requires consideration:

- Facility Construction and Operational OH&S – Delivering projects in China will require careful assessment of the associated risk and safety of Chinese and Foreign workers in both the

construction and operational phases of the project. The maturity of workplace safety systems, construction methodologies and workplace health and safety procedures and policies in China appear to be of a lower standard than in western countries. The utilisation of Western design, or equivalent, construction techniques and principles should be utilised for the proposed manufacturing facility including process design and materials handling systems.

- Quality assurance and product integrity – The integrity of the product and the subsequent shelf life of the finished goods in China may currently not be of the same standard of equivalent product manufactured in Australia or other western countries. The quality of imported products into China can be reduced due to inefficient cold chain logistics. Long-term strategies should include improved control of the “Cold Chain” from import to processing and distribution of the finished goods to retail customers and the consumer.
- The processing plant should be configured with building construction details, plant and processes that are equivalent to International Export standards including refrigeration systems.
- Cold storage, refrigerated transport and supply chain logistics systems should also be configured to reflect International good practice.
- IP protection - The production processes that are utilised in the proposed manufacturing facility are of specific value to the Australian entities and will generally provide specific brand and quality attributes to the finished product. Consideration should be given to how the intellectual property of the process, including recipe and process trade secrets (if applicable), are managed to ensure brand and product integrity is maintained.
- Traceability and product substitution – There are many reports of product substitution in the Chinese consumer market. Consideration as to how product traceability and integrity is maintained throughout the process should be controlled within the proposed manufacturing plant. Key point for consideration includes, Country of origin Labelling (COOL), and cut and brand substitution.

4.5.2 Risk Management

Several key elements were identified– these were:

a. Customer education – Change of mindset: buying packaged meat from shelf instead of from instore butcher counter.

- Mitigated by:
 - o The China market insights provided by MLA confirmed the Argyle strategy in place and gave them the confidence to further execute the strategy.
 - o DCH/Citic operational support.
 - o Argyle experience in similar markets.
 - o Ability to offer typical Chinese products from China based processing plant.
 - o Focus on different customers with different product mix (retail/foodservice/online and retail ready/primals).

b. Operational complexity – Argyle’s ability to execute on the above due to cultural differences and communication challenges

- Mitigated by:
 - o Argyle needs to be immersed in DCH’s business with total alignment and support from top down.
 - o Expansion of Argyle’s operational team with more senior/experienced people.

c. Capital intensive nature of the vertically integrated beef business and Chinese retail sales as well as promotional/marketing expenditure

- Mitigated by:
 - o DCH alignment / support.
 - o Improved ability to attract the required working capital financing.
 - o Margins built into the costings.
 - o MLA co-marketing.

4.5.3 Process Design

Although the final process design deliverables and throughput continue to evolve, a whole of facility concept that allows planning for the initial and future stages of work is a key design element. The development of an overall process concept assists in identifying the quantum of building services required for the initial process but will estimate the building's longer-term needs for services and infrastructure during later stages of the project development.

Design information required - Key process information required during the concept and stage one design included:

- Estimated Short, medium and long-term production throughputs.
- Possible products to be processed and finished goods produced.
- Destination of finished goods (Country, Province, City).
- Preferred equipment and suppliers, if known.
- Finished goods packaging formats.
- Raw materials availability and format (chilled, frozen, box, bulk, etc.)
- Local authority requirements and any other special Chinese or if applicable export market requirements.

This data provided information necessary to design raw material receipt, equipment layout and finished goods dispatch functionality required to meet production demands. This information enables basic mass balance of the raw materials, products to be manufactured, the processes required and depending on the quality of information, the sales patterns and volumes expected during the project stages.

Production Facility Equipment Procurement and Operational Support

When developing a project in China, it was found to be imperative to partner with an organisation currently operating in, and with a strong track record of success in, the region that the project will be delivered. These organisations should, beyond commercial sales and marketing capability, include; equipment supply, process design, spare parts, equipment maintenance and service support.

Other key points that should be considered include:

- Developing a production facility design and associated cold chain logistics consistent with international good practice.
- Conducting a master planning and high-level evaluation of the potential final production process and required throughput to ascertain the limits of the existing building structure and services.

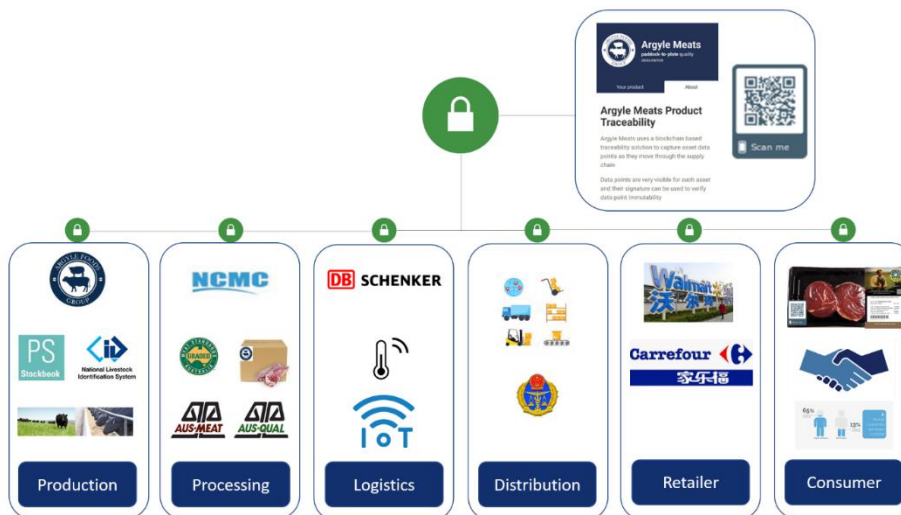
- Clearly defining the initial stage of the facility’s development including production throughput and products to be processed. This should then, where possible, extend to subsequent future stages of the project.
- Establish the long-term capacity requirements of services and building design to support the process and ensure these will be available as the facility expands to the expected final configuration.

4.4 Supply Chain Design and Digital Traceability Implementation

Supply chain is one of the most complex multi-party systems that span across different participants such as farmers, processors, retailers. Current trusted parties can be decentralized among all participants. The operations are distributed and come from all participated organizations. Data transparency is desired because other participants need to know what steps or sequences the transferred item have reached, in order to be able to react and be prepared for their part. Transaction history and data immutability are desired, which enables tracing back to the origin of the transferred commodity and auditing the condition of the item. Current supply chain systems, especially the ones that use paper-based documents, are not being updated in real-time. Supply chains are a promising area for blockchain-based applications as they will benefit from the digital nature of blockchain while not being affected by its current limitations.

Prototype was developed and submitted, in where, blockchain data points through supply chain were identified and blockchain in real time (figure 6), all stages of product touch point and consumer relevance were integrated and simple QR code initiated for viewing of information (figure 7).

Figure 6: Argyle Paddock-to-Plate Blockchain Data Points through Supply Chain

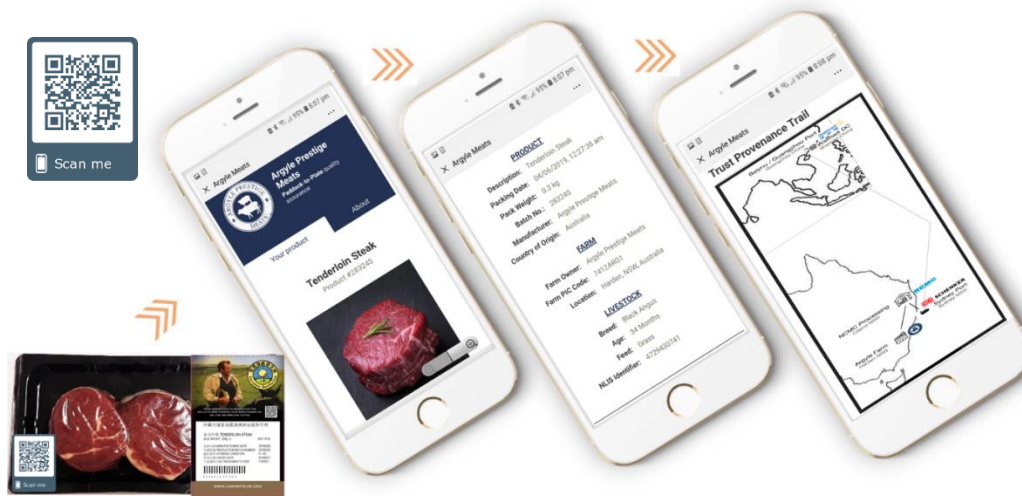


Argyle blockchain prototype and scan results:

- 1) With a Smartphone, Scan the QR code in the package.
- 2) Navigate through the Consumer facing app where the Argyle product is presented.
- 3) Scan result - Scroll down to see product details and the BLOCKCHAIN hash references to reflect touchpoints through the supply chain.

- 4) Find information about the participants in the supply chain such as the Argyle Prestige Meats story/video, cooking tips, etc.

Figure 7: QA code scan result



4.4.1 Supply Chain Design

An estimated 75-80% of cold-chain infrastructure in China is of insufficient quality and is significantly overpriced as utilisation is low (fresh meat utilisation is 30%) and significantly lags that of developed countries. A further US\$85 billion is estimated to be required to invest between the years 2015 and 2025 to improve China's cold chain infrastructure (pers. Comms, industry insider 2020).

When considering the supply chain, the following questions to address across its various stages were considered – such as:

- At the Producer level: Are there unique elements that can be leveraged to deal with counterfeiting?
- At the Processing level: How should the product be modified in its processing and packaging moments to help deal with traceability?
- At the Supply Chain level: How to manage and control the product once it leaves the processing plant?
- At the Retailer level: How to manage and control the product in all different channels?
- At the Consumer level: How to get consumers know the product's authenticity and trusted provenance? How and when is preferred to move from insurance to branding?

It was identified that along with developing 30+ products for the different retail customers, underpinning this is the requirement for a paddock to plate supply chain and digital platform. Below captures this notion in a supply chain flow chart.

Figure 8: Argyle’s Supply Chain flow chart

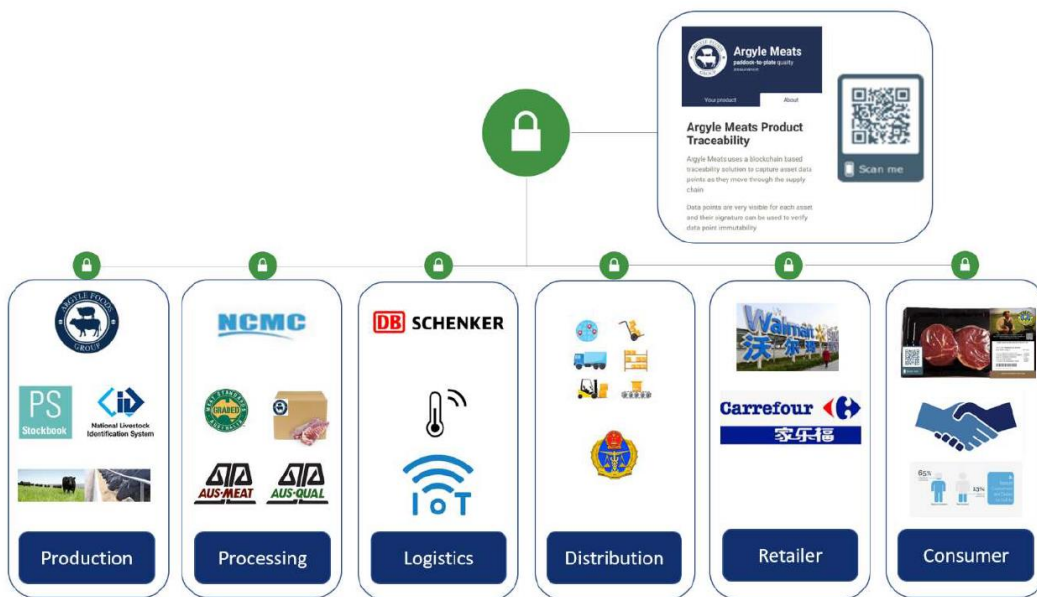
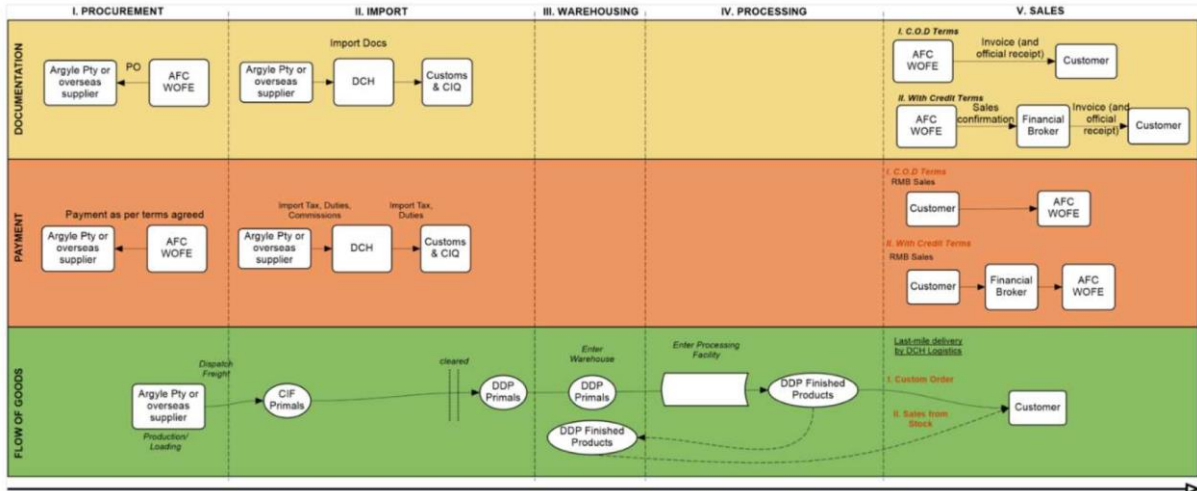


Figure 9: Argyle Paddock-to-Plate Blockchain Data Points through Supply Chain

4.4.2 Digital Traceability Blockchain Implementation

Product traceability has long been a challenge for retail products due to the complex nature of supply chains. Argyle has become increasingly aware of customer demands for true paddock to plate provenance, authenticity and integrity of product claims, as well as the role each of these play in improving consumer confidence in products and brands.

As producers and suppliers of premium Australian products, it is particularly critical that quality assurances are introduced to Argyle products, through improved traceability and technology, to validate claims such as ‘Beef’, ‘Antibiotic Free’ and ‘Australian’. Additional claims relating to specifics around the origin of the animal, humane animal treatment certifications, high safety standards by product handlers and regulatory compliance would all be beneficial in justifying and building upon product value.

From a food safety perspective, improved product traceability over the full extent of the supply chain would be highly beneficial in the event of a disease outbreak or contamination event by introducing greater transparency of the product custodians throughout the supply chain from freight providers and processing facilities, right the way back to the product origin farm. Individually as supply chain participants, and collectively as an industry, Argyle & perhaps entities such as MLA could more quickly and clearly identify the source of the issue and isolate only the impacted products, rather than issuing widescale recalls. This would lead to reductions in the number of consumers exposed to the product, reductions in revenue and reductions in food wastage.

By tracking products more closely over their entire journey through the supply chain, Argyle sees enormous potential to realise increased shelf-life, and therefore product value. Equally important is the ability to build on product traceability and provenance to deter fraud and protect the industry by anti-counterfeit technology measures. The faster the progress in adopting technologies to improve product traceability, the faster the industry can continue to develop trust with customers, and the greater product differentiation Argyle can establish in the marketplace.

Traceability Research Criteria

As part of this project, Argyle conducted substantial research into various traceability solutions both currently on the market and in the development pipeline, in order to determine the most appropriate traceability plan for its meat supply chain. Many of the supply chain traceability platforms and products are in their infancy and therefore a substantial assessment of the value propositions of the various solution options were a critical part of the initiative. In particular, the assessment of the traceability options was based on:

1. Scalability - both within Argyle's growing supply chain and the wider supply chain industry for economies of scale.
2. Comprehensiveness - ability to track the full end-to-end supply chain from farm to consumer.
3. Agility – ability for the traceability solution to work in the complex Argyle supply chain with many moving parts, without inhibiting existing operations.
4. Implementation time – ability to develop, integrate and implement within a reasonable timeframe.

Based on this research, Argyle has taken the view that commodity agnostic solutions provide greater scale ability potential and therefore greater likelihood of take up within the food supply chain industry and associated economies of scale benefits - critical for reducing build and operational costs to maximise return on investment of any financial expenditure in tech and R&D. There are also likely to be valuable lessons from other fresh produce supply chain's, that the red meat industry can learn from and take advantage of through use of common traceability platforms and AI driven logic. Naturally, however, the chosen solution must still provide all the functionality required to track red meat through the supply chain, exports in particular.

Traceability Partners

As a result of the substantial research, Argyle have partnered with the following organisations to develop an end-to-end supply chain traceability platform:

1. KMPG Origins - Commodity-agnostic traceability platform enables data sharing in a trusted environment with transparent governance.
2. IoT provider of independent and objective data for products presently in the value chain to enable reporting on their performance.

Argyle proposes to be one of the first use-cases in the Australian red meat industry to have its supply chain traced.

KMPG's Origins platform will be the immutable blockchain data layer, integrating with the various datapoints along Argyle's supply chain including NLIS, MLA and Stockbook with additional capabilities to integrate with NCMC's internal Epicor ERP system and various freight provider ERP systems if required. A third-party Value-Added processing plant located in Brisbane will also be integrated into the KPMG origins platform to track retail ready products from production to an initial key e-commerce customer in Hong Kong (Home +). The Home + platform was launched in late 2020 and Argyle is the exclusive red meat supplier of Australian red meat. The platform is well funded and ambitious to dominate the rapidly expanding B to B and B to C e-commerce market in Hong Kong as a result of Covid-19. Their intended point of difference in the marketplace is ensuring all Australian red meat products are tracked and traced in the Argyle/KPMG platform form from production to delivery to the end customer.

The commencement date for this joint project was late 2020. Importantly, KPMG will be an operational platform by that date and will already be tracking wine, rice and sugar. Therefore, while Argyle will be the first red-meat use case, it will be building on and adapting an existing platform, maximising the cost-effectiveness of the project relative to ground-up build alternatives.

Other Steps

Argyle currently uses Stockbook as its on-farm livestock management tool. This tool enables Argyle to track every animal on a per-head basis using the MLA-issued NLIS tag as the unique identifier. All information relating to specific animals can be tracked on a per-head basis including veterinary treatments, feed inputs as well as other valuable whole-of-life data including weights.

Importantly, Argyle will continue to remain agile with its choice of software going forward. As noted in Section 5.2.4, Agriwebb has been identified as an alternative individual livestock management tool that offers several key advantages over other product offerings in the market.

4.5 Value Proposition

The Chinese market is currently open to 11 countries: Canada, Argentina, Brazil, Uruguay, Chile, Australia, New Zealand, Mongolia, Costa Rica, Mexico, and Hungary. This means that the ability to manage traceability across the supply chain will be critical to differentiate Australian Beef from other countries. Australia has a market reputation synonymous with quality, clean, and safe product. However, competing countries like New Zealand, Brazil, and those from Western Europe and North America also offer products that are of high quality and cleanliness. Covid-19 and market access disruptions has also created opportunities to utilise the findings in the project for other global markets, in particular Argyle has successfully done so in Hong Kong, Taiwan and the USA.

Traditional supply chain financiers cannot finance the products throughout the fully integrated supply chain as a result of a lack in traceability during the value add and storage stages. With the implementation of the blockchain technology all products can be traced and therefore financed throughout the full supply chain due to improved transparency.

Benefits and implications to the Australian red meat industry from this project include:

- Secure the Value, Provenance, Safety and Authenticity of Australian Meat and Livestock.

- Bio security improvements through animal traceability and movements linked to an improved animal ID/NLIS system.
- Asset Value measurement and protection in the supply chain to enable access to alternative and more efficient trade finance – in particular with imminent herd rebuild following sustained drought and negative cash flow implications on ability of producers restock.
- Protected and improved market access for Australian red meat exports.
- Initiate a new industry standard for livestock trading, management, marketing and financing for net improvements across industry efficiency, value and sustainability.

4.6 Covid-19 Impact

4.6.1 Retail Sector and E-commerce

The impact of coronavirus on the China market across all food consumer segments is still unfolding. China is expected to stabilise and recover quickly from Covid-19 through mid to late 2020. The retail sector and online sectors have seen huge increases in sales and it is believed the food service sector will take 4-5 months longer to recover. Already, Argyle has seen a huge increase in demand for our frozen thaw retail product in the month of March 2019. Argyle has struggled to maintain supply of the hugely increased order volumes. Chinese retailers are moving fast to improve their supply chain management in the wake of the virus impacts. These same impacts were equally experienced in the Hong Kong market and Argyle has capitalised on this opportunity launching their own e-commerce platform, Argyle Black, and securing exclusive partnerships with 2 key e-commerce platforms in the market. Argyle also developed further processing capabilities in Hong Kong, including launching an interactive butcher and dining facility.

The ability to hold frozen retail ready products with stable shelf life while stored adds value in addressing large sales uplifts. Consumer trends and retailer trends will quickly focus on the need for supply chain integrity and traceability back to source and safe packaging and shelf life. Online sales in all China retailers are booming as people shop from home and isolation. “Non-contact” E-commerce delivery sector is also booming as people fear for human contact and infection and these habits will continue after the virus, laying the foundation for strong growth in fresh e-commerce. Furthermore, the Covid-19 pandemic will result in an increased demand for imported products. Australia has been perceived as a producer of clean and safe food and will certainly benefit from this trend as a result according to Rabobank (Askew, 2020).

Retailers are focussing on risk mitigation within their supply chains. A rapid increase in pre-pack meat supply from centralised plants and direct imports is a key focus in addition to addressing consumer needs for technology-backed verification of supply chains for high-risk products such as red meat. Walmart has put forward a proposal for Argyle to supply “slabs” of hind quarter beef in vac bags (400g-1.2KG) of any hind quarter cut, packed off the boning line in NCMC and shipped chilled to China to replace the “wet market” environment within hyper market stores as a step 1 in removing any customer interaction touching fresh meat. This allows consumers to sort through the pieces of meat safely to take home for their traditional meal preference. The ongoing move from traditional wet markets to modern channels will speed up – partly thanks to regulations and partly due to consumers requiring better safety and improved traceability according to Rabobank.

Walmart and other retailers are acknowledging the “retail revolution” that is underway due to the global pandemic and Argyle & MLA together are poised to execute at scale to position Australian red meat as the safest produced, packaged and delivered product in the market for consumers to trust in.

Actual graph below of Walmart sales data provided by DCH in sales review meeting March 2020.

Walmart stores now completely out of stock in March'20.

Wal-Mart sales



Figure 10: Post data shows that there is a great opportunity for Argyle to sell in offline retailers.

Food Service Sector

Community dining and hot pot dining is the most popular dining experience for the Chinese consumer. However, due to Covid-19, Chinese consumers will be forced to dine more at home with a focus on family hot pot options and other convenient cooking solutions, providing an opportunity for launching the MAP packaged range of sliced Shabu-shabu produced in China from Australian red meat.

4.7 MVP Concepts

4.7.1 Value Adding Stream

Value-add is the process of taking a raw food material and changing its form to a higher-value (or premium) product. The value attributed to the product by consumers can come from a range of factors such as convenience, brand, origin, or after sale services etc. Value-add processes comprise a broad range of factors, including export regulations, additional process and labour, quality control (shelf life, allergens and foreign objectives), logistics and storage. When these factors are managed strategically and efficiently, the risk is reduced, and the product is more likely to meet consumer expectations and increase or improve trade. Customers (value-chain business partners or collaborators) and consumers are more likely to pay premium prices up to multiples of 2-3 times the input commodity price.

It was found in the project the following observations:






1) Key Market Trend:

- Clean and Healthy Grass fed and free-range grain fed, hormone free, no antibiotics, originally packed in Australia, country of origin Australia
- Clean and Premium Australian Angus grass fed, Australian Angus grain fed or/ and Angus EQG (with good marble score), Australian Wagyu (with specified MB)
- Chilled with Shelf-Life Solution
- Branded retail ready value-added products (in Darfresh, thermo and MAP packaging)
- Focus on GP and low shrinkage: 5 days versus 21 days plus
- Metro, Convenience Retails and E-commerce – small outlets vs. hyper markets
- Small purchase, barcoded ready to sell and information of cooking instruction
- Small portioned for meal solution, pre-marinated products, products with sauce sachets, ready to cook or/and meal kits
- Food Safety and Authenticity – Trust provenance and suppliers (or brand recognition) with product traceability
- Closed loop and balanced supply chain
- Direct supply to major retailers
- Blockchain digital traceability available from carcass to retail pack
- Growing Economy, Changing Lifestyle and Chinese consumer protein demand
- Westernized lifestyle – Western style meals (steaks, Western meals, Western style BBQ, protein, oven cooking protein, protein for salad, sandwich or burger)
- Chinese tradition cuisines – hotpot (beef and lamb shabu,
- Other Asian country food culture influence – Korean (Bulgogi, BBQ Ribs), Japanese (Teppanyaki, Yakimiku, Sukiyaki), Vietnam Beef Soup Bowl etc.

2) Refined Product Range:

Based on the trends new product pipelines were built for the high value adding retail ready strategy as shown on the ensuing pages.

Table 3: Refined Product Range

Description 产品	Image 照片	Pck Size (g) 盒装/克	Raw Material 原料
Grass Fed Beef Dice 澳洲牛肉粒 300g		300g	Topside
Grass Fed Beef Shabu 澳洲火锅牛肉片250g		250g	Eye Round, Chuck Tender
Beef Mince 澳洲牛肉糜 300g		300g	85CL Trim
Grain Fed Beef Shabu 澳洲谷饲火锅肥牛片250g		250g	Brisket PE
Grain Fed Beef Yakiniku 澳洲谷饲烧烤肥牛片250g		250g	Oyster Blade MS2

<p>Wagyu BBQ Strip 澳洲和牛烧烤肥牛片 200g</p>		<p>200g</p>	<p>F1 Wagyu Chuck Tender or Eye Round M6+</p>
<p>Wagyu Beef Dice 澳洲和牛一口排 250g</p>		<p>250g</p>	<p>F1 Wagyu Chuck Roll</p>
<p>Wagyu Beef Shabu 澳洲和牛火锅肥牛片 200g</p>		<p>200g</p>	<p>F1 Wagyu Outside Flat</p>

4.7.2 Preliminary Shelf-life Testing of Frozen Thawed MAP Range

Table 4: Observed shelf life of MAP products based on various attributes

	MAP Steak	MAP Mince	MAP Dice
Observed shelf life (days) based on the following attributes*			
Package integrity	>9	>9	>9
Colour before opening	6	5	4
Colour 5 min after opening	6	5	4
Odour 5 min after opening	6	5	5

The time taken for MAP products to reach their end of shelf life based on different attributes.

In addition to the above, two-toning was observed in all MAP products (both before and after opening) from day six onwards after storage at 4°C.



Figure 11: Example of two-toning MAP products (before and after opening)

The shelf-life testing result indicates that frozen thawed MAP products had shelf lives ranging from 4-6 days after thawed and displayed at 4°C.

4.8 Commercial Launch

The senior management team at Argyle have substantial experience in the Chinese market and so have first-hand knowledge of the major market drivers. The China market insights provided by MLA confirmed the Argyle strategy already in place and gave them the confidence to further execute the strategy and have these plans approved at the board level. Below summarises the key markets.

4.8.1 Targeted Market

A. Mass Products Market

METRO

- Mother Company: METRO Group
- PRC HQ: Shanghai
- No. of stores: 76
- Brand Portfolio: METRO Cash & Carry Key
- Region: East China -- Shanghai, Jiangsu

SPAR

- Mother Company: Spar International
- PRC HQ: Shanghai
- No. of stores: 360 (8 provinces)
- Brand Portfolio: • Hypermarket (mid-end); Supercentre (mid-end); Superstore (mid/high end)
- Key region: East China

Lianhua Supermarket Holdings Co., Ltd.

- Mother company: Bailian Group
- PRC HQ: Shanghai (Putuo District)
- No. of stores: 5,268 (of which 3,184 supermarkets)
- Brand Portfolio: • Lianhua: mid-end supermarket / Hualian: mid-end supermarket / Lianhua
- Quick: convenience store / Century Mart: hypermarket (Bailian bl.com: online supermarket)
- Key region: Nation-wide

Carrefour China Inc.

- PRC HQ: Shanghai
- No. of stores: 231 • Brand Portfolio: • Hypermarket • Supermarket • Convenience store •
- Key region: East China (67 stores)
- Jiangsu (31)
- Shanghai (29)
- Zhejiang (7)

B. Premium High-end Retailers

- CitySuper: Shanghai (7)
- Freshmart: Shanghai (2)
- APITA (UNY): Shanghai (1)
- Sam's Club (15): Shanghai, Fuzhou, Guangzhou, Hangzhou, Dalian Suzhou
- AEON (8): Qingdao, Suzhou
- Isetan (Isetan co. Ltd.): Shanghai (2)
- BLT (30): Shanghai
- Cityshop: Shanghai (14),
- Bravo (42): Shanghai,
- DIG boutique (50): Shanghai (15)
- G-super: Shanghai (5)

4.8.2 Market Insights and Consumer Preferences

There are different forces driving growth in retail and online retail sectors. For supermarkets, red meat sales was forecasted to grow 9.9% to CNY 14.11B by 2020 to 16% of all red meat sales. This was primarily driven by older consumers and larger households. For online sales, red meat growth was:

forecasted to grow by 16% to 5.9B CNY by 2020, accounting for 7% of all red meat sales. This channel has a higher spend per month on red meat than in store shoppers. While 2/3 of consumers say they would be likely to use online shopping for chilled and frozen meat, they have concerns about hygiene and freshness although these consumer concerns are likely to have changed since the Coronavirus outbreak (pers.comms, 2019).

It was found that the following key consumer trends that impact red meat were:

- Meat is a crucial part of diet and growing.
- Red meat faces intense competition from traditional options (pork, chicken, fish, eel, shellfish, duck, goose, frog, dog, turkey, pigeon),
- Imported meat consumers are less likely to eat traditional staples like pork and fish.
- Imported meat eaters are more likely to have a higher monthly spend (avg 200RMB/ month) on red meat. 51 % consume imported meat several times per month.
- Online shoppers spend more per month on red meat than in store shoppers (larger quantity and in bulk),
- Online more likely to buy expensive/ specialist cuts of meat,
- Awareness and consumption of Australian origin red meat is higher than other imported meats. Better in terms of quality, taste and safety.
- 57% of beef consumers are aware of Australian Beef compared to just 32% for non-Australian Beef. However only 32% claim Australian beef is available where they shop.
- Friends and family are most trusted source of information when buying meat (97%) followed by on pack certification logos (91%), brand websites (88%),
- Freshness is the most influential factor in overall meat purchases. Use-by date is key indicator for over half of consumers.
- For those for whom freshness is less important, key factors are visibility of blood, ice in pack, animal welfare and product quantity.
- Freshness is less important for imported meat consumers.
- Chilled counter meat dominates sales (73% of total sales) but is expected to decline to 67% of sales by 2020 (10B CNY).
- Packaged meat presents big opportunities. Expected to grow to 7.6BCNY.

There are a variety of consumer targets, these range from demographic segments to behavioural or lifestyle segments. The Argyle sales team segmented demographics as women, older (45+), young adults (25-35) and young consumers (18-34). Behavioural segments include impulsive cooks, and ethically minded.

Each of these may have slightly different drivers such as:

- Women: Meal prep and shopping lies mainly with women (73% claim to be complexly responsible for meal prep and shopping).
- Older consumers (aged 45+) spend the most on red meat (over 200 RMB per month). 36% of over 45's focus this spend on beef. Key benefits are health (heart health).
- Young adults (25-35) are most likely to try new kinds of meat, flavours and recipes.

- Young consumers (18-34) are more likely to agree they rely on time saving products and services.
- Impulsive cooks have a higher monthly spend on meat.
- Ethically minded consumers are willing to pay a premium. Key benefits are animal welfare and environmental sustainability.
- China is top importer of red meat (beef, sheep)
- 80% of supply chain is fragmented and selling to wholesalers
- China: Cold Chain infrastructure is robust at ports cities, but not across the country
- China: Future growth is interior of country
- China: Grey channel will continue driven by demand vs supply

4.9 Cost Benefit Analysis

This project has direct benefits for the Argyle Foods Group, but it has much wider ramifications for other Australian value chains servicing other market channels in China. The only entity that delivers value to the Australian red meat industry is the end consumer (and their willingness to pay / demand Australian red meat), which subsequently flows back in part to the Australian producer. As consumers become more aware of Australian red-meat, other Australian companies will adopt different combinations of these technologies for distribution within their market channels into China.

4.9.1 Baseline supply chain challenges:

The issues listed below with current chilled retail market channels were used to create the baseline:

- Product transport is by airfreight to ensure long enough shelf life which is a large cost
- Mark downs and dumps were at 25% due to short shelf life as a result of poor handling through Chinese cold chain logistics. These costs are paid by the Australia seller to keep space allocation on shelf.
- Product does not present as well due to shelf life. Markdowns give consumers the perception that Australian product is low quality, and only buy on special, both of which devalue the “Australia” brand.

4.9.2 Innovation value created from the project

This feasibility study demonstrates reduction in cost to the supply chain which gives a solid advantage over supply from other countries and a financial benefit to build a large retail chilled red meat shelf presence in China. The initial launch period runs from 2019 to 2025. The following results are a high-level summary from the final business proposition.

Volume growth proven over a 6-month period demonstrated that consumer acceptance of the new product remains stable (no increase or decrease). The real value created is in:

- Increased supply chain efficiency
- Reduced wastage (Markdowns and dumps were ~25% of sales) which the Australian vertical producer must pay for to maintain ranging in retailer

- Increased market penetration (competition against other country products)

4.9.3 Sales channel development

The following target Chinese outlets are being explored beyond Walmart with existing sales growth forecast out to 2025 for each sales channel:

- METRO Cash and Carry – 76 stores in Eastern China (Shanghai, Jiangsu)
- SPAR Hypermarket, Supercentre, Superstore – 360 stores in 8 provinces in East China
- Laianhua (Bailian Group) / Hualian mid-end supermarket / Quick convenience stores, Century Mrt hypermarket and online – 1200 stores nationwide
- Carrefour China – 231 stores East China, Jiangsu, Shanghai, Zhejiang
- Top 50 premium high-end retailers in Shanghai such as CitySuper, Freshmart, Sam's Club, BLT, Cityshop, Bravo, DIG boutique and G-Super The sales target by 2025 for Argyle implementing the outcomes from this project is \$30 Million at 1,000 MT per week in over 3,000 stores.

Sales are forecast at 2,400 Tonnes by 2025 and summarised in Table 5.

The current product range is summarised in Table 6

4.9.4 Modelling Assumptions:

- Volume per store per week remains constant to 2023 with a 5% growth in volume per store from 2024-2025.
- Retail sales price reduces from 2022 but retailer margin increases due to lower processor selling price through reduced costs.
- Processor/producer finished sales price reduces over time to retailer due to supply chain efficiency gains
- A more conservative volume forecast per store per week (half of processor forecast) than provide by the Australian company.
- A more conservative sales price / kilogram to allow for in-market logistics management costs (~\$5.50/kg)
- Supply chain efficiency is the margin being created as a result of this project. But a "First to market" strategy, coupled with True Aussie Brand education with consumers, and supported by product integrity are the reasons value can be differentiated from competing country products for the period to 2025.
- A conservative valuation of benefit has been taken with a reduction in that saving over 2 years. Value past the two years has been counted at typical industry rates (5% net profit) on the basis that first to market has created the Chilled category, but profit margins return to market average after market share is established. The assumes that if the research project had not been done then other countries would be gaining market access instead of Australia, based on lower cost frozen category competitive advantage.

4.9.5 Project Benefit Cost Ratio

Sales activity post covid and commissioning value adding operations continues to be fluid development. For the purpose of this report, the frozen thaw developments to date used with the sales forecasted for the existing products, the value created above the baseline performance prior to the project provides a benefit cost ratio of 24:1 as summarised in the bottom of Table 5.

Table 5: Sales volume and value forecasts for Argyle to 2025

Year	Chilled/ Airfreight		Frozen/ Thawed		Forecast					
	2020	2020	2021	2022	2023	2024	2025			
Retail Sales China										
Value (AU\$ M)		0	0	3	9	25	55	115		
Volume (MT)		1	1	68	211	570	1,198	2,396		
YOY Growth					310%	270%	210%	200%		
Value Added Processing										
Australia Processing Volume (MT)		2	2	77	202	354	338	675		
China JV Processing Volume (MT)			-	-	33	268	938	1,876		
Primary Processing										
Processing Volume (Head)		1000	1,000	2,000	4,000	8,000	12,000	15,000		
Benefit Created										
					\$'000s					
Argyle										
Value Added Processing Margin Australia		(14)	4	310	911	1,776	1,886	4,175		
Value Added Processing Margin China		-	-	-	326	2,853	10,755	23,172		
Total Benefit Created				310	1,237	4,629	12,641	27,347		
Cumulative Benefits								46,164		
Benefit Created										
					\$'000s					
Argyle Investment										
Argyle Investment					775					
Industry Investment				350	775					
Total Investment				350	1,550	-	-	-		
Cumulative Investment								1,900		
Benefit : Cost Ratio									24.3	

Table 6: Argyle's product range developed for each target customer

Product List

Walmart

BEEF STRIPLOIN STEAK IW/VAC 180g
BEEF OYSTER BLADE STEAK IW/VAC 180g
BEEF CUBE ROLL STEAK IW/VAC 160g
BEEF CHUCK ROLL STEAK IW/VAC 180g

Ole

BEEF CUBE ROLL STEAK IW/VAC ANGUS GRAIN FED 180g
BEEF STRIPLOIN STEAK IW/VAC ANGUS GRAIN FED 180g
BEEF OYSTER BLADE STEAK IW/VAC ANGUS GRAIN FED 180g
BEEF SHORT RIB MEAT STEAK IW/VAC ANGUS GRAIN FED 160g
BEEF CUBE ROLL STEAK (RIBEYE) IW/VAC 180g
BEEF STRIPLOIN STEAK IW/VAC 180g

SF Best

BEEF STRIPLOIN STEAK IW/VAC 130g
BEEF CUBE ROLL STEAK IW/VAC 130g
BEEF CHUCK ROLL STEAK IW/VAC 130g

Miss Fresh

BEEF CHUCK ROLL STEAK IW/VAC 130g
BEEF OUTSIDE FLAT IW/VAC STEAK 130g

Chairman Dong

Beef Wagyu / F1 Wagyu MB:6+ Ribeye Steak 250g
Beef Wagyu / F1 Wagyu MB:6+ Ribeye Steak 2x250g
Beef Wagyu / F1 Wagyu MB:6+ Ribeye Steak 4x250g
Beef Wagyu / F1 Wagyu MB:6+ Sirloin Steak 250g
Beef Wagyu / F1 Wagyu MB:6+ Sirloin Steak 2x250g
Beef Wagyu / F1 Wagyu MB:6+ Sirloin Steak 4x250g
Beef Wagyu / F1 Wagyu MB:6+ Eye Fillet Steak 250g
Beef Wagyu / F1 Wagyu MB:6+ Eye Fillet Steak 2x250g
Beef Wagyu / F1 Wagyu MB:6+ Eye Fillet Steak 4x250g
Beef Wagyu / F1 Wagyu MB:6+ Rump Steak 250g
Beef Wagyu / F1 Wagyu MB:6+ Rump Steak 2x250g
Beef Wagyu / F1 Wagyu MB:6+ Rump Steak 4x250g
Beef Ribeye Steak Grain Fed 250g
Beef Ribeye Steak Grain Fed 2x250g
Beef Ribeye Steak Grain Fed 4x250g
Beef Sirloin Steak Grain Fed 250g
Beef Sirloin Steak Grain Fed 2x250g
Beef Sirloin Steak Grain Fed 4x250g
Beef Eye Fillet Steak Grain Fed 250g
Beef Eye Fillet Steak Grain Fed 2x250g
Beef Eye Fillet Steak Grain Fed 4x250g
Beef Rump Steak Grain Fed 250g
Beef Rump Steak Grain Fed 2x250g
Beef Rump Steak Grain Fed 4x250g
BEEF BOLAR BLADE STEAK 2x200g
BEEF OYSTER BLADE STEAK 180g
BEEF CUBE ROLL STEAK 180g
BEEF SIRLOIN STEAK 180g

Table 7: Financial opportunity created above baseline to 2025

ROW	CHILLED AirFreight			Frozen / Thaw			Processing Split Aust/China			Processing Split Aust/China			Processing Split Aust/China			Processing Split Aust/China			Processing Split Aust/China			
	2020			2020			2021			2022			2023			2024			2025			
	\$/kg	Volume (MT)	Value	\$/kg	Volume (MT)	Value	\$/kg	Volume (MT)	Value	\$/kg	Volume (MT)	Value	\$/kg	Volume (MT)	Value	\$/kg	Volume (MT)	Value	\$/kg	Volume (MT)	Value	
1	Value Adding in Australia																					
2	\$13.76	2	\$25,367	\$13.76	2	\$21,308	\$18.13	94	\$1,393,448	\$19.04	246	\$3,855,321	\$19.99	430	\$7,072,247	\$20.99	411	\$7,088,320	\$22.04	822	\$14,885,472	
3	\$0.00		\$0	\$0.00		\$0	\$0.00		\$0	\$0.00		\$0	\$0.00		\$0	\$0.00		\$0	\$0.00		\$0	
4	\$1.13		\$2,081	\$1.13		\$1,748	\$1.18		\$90,513	\$1.21		\$245,657	\$1.25		\$442,053	\$1.29		\$434,618	\$1.33		\$895,313	
5	\$11.24		\$20,720	\$11.24		\$17,405	\$10.68		\$820,563	\$10.88		\$2,202,674	\$11.15		\$3,944,108	\$11.45		\$3,867,315	\$11.75		\$7,934,265	
6																						
7	\$3.02		\$5,567	\$1.67		\$2,579	\$1.65		\$126,890	\$1.70		\$344,386	\$1.75		\$619,712	\$1.80		\$609,290	\$1.86		\$1,255,137	
8	\$4.29		\$7,903	\$4.29		\$6,639	\$3.03		\$232,558	\$3.18		\$643,431	\$3.34		\$1,180,317	\$3.50		\$1,182,999	\$3.68		\$2,484,298	
9	\$2.06		\$3,794	\$2.06		\$3,187	\$1.45		\$111,628	\$1.53		\$308,847	\$1.60		\$566,552	\$1.68		\$567,840	\$1.77		\$1,192,463	
10	\$4.29		\$7,903	\$4.29		\$6,639	\$3.03		\$232,558	\$3.18		\$643,431	\$3.34		\$1,180,317	\$3.50		\$1,182,999	\$3.68		\$2,484,298	
11																						
12	\$42.86	2	\$79,032	\$42.86	2	\$66,387	\$44.50	77	\$3,420,023	\$46.73	202	\$9,462,347	\$49.07	354	\$17,357,841	\$51.52	338	\$17,397,291	\$54.10	675	\$36,534,311	
13	25.0%		\$19,758	5.0%		\$3,319	3.4%		\$116,279	3.4%		\$321,715	3.4%		\$590,158	3.4%		\$591,500	3.4%		\$1,242,149	
14																						
15	-\$7.63	-18%	(\$14,061)	\$2.30	5%	\$3,563	\$3.85	9%	\$295,585	\$4.43	9%	\$896,886	\$4.98	10%	\$1,762,377	\$5.54	11%	\$1,872,410	\$6.16	11%	\$4,160,914	
16																						
17	Value Adding in China																					
18							\$0		\$0	\$19.15	40	\$633,590	\$20.11	325	\$5,388,687	\$21.12	1,139	\$19,803,425	\$22.17	2,278	\$41,587,192	
19							\$0		\$0	\$0.78		\$25,942	\$0.81		\$216,432	\$0.83		\$780,237	\$0.86		\$1,607,288	
20							\$0		\$0	\$1.92		\$63,359	\$2.01		\$538,869	\$2.11		\$1,980,342	\$2.22		\$4,158,719	
21							\$0		\$0	\$0.92		\$30,412	\$0.97		\$258,657	\$1.01		\$950,564	\$1.06		\$1,996,185	
22							\$0		\$0	\$0.00		\$0	\$0.00		\$0	\$0.00		\$0	\$0.00		\$0	
23							\$0		\$0	\$1.17		\$38,540	\$1.20		\$321,540	\$1.24		\$1,159,150	\$1.27		\$2,387,850	
24							\$0		\$0	\$10.60		\$350,680	\$10.86		\$2,910,924	\$11.16		\$10,464,832	\$11.45		\$21,467,565	
25																						
26							\$0		\$0	\$0.00		\$0	\$0.00		\$0	\$0.00		\$0	\$0.00		\$0	
27																						
28							\$0		\$0	\$46.51	33	\$1,538,616	\$48.84	268	\$13,085,930	\$51.28	938	\$48,090,793	\$53.85	1,876	\$100,990,664	
29							\$0		\$0	4.6%		\$70,298	4.6%		\$597,884	4.6%		\$2,197,223	4.6%		\$4,614,168	
30																						
31							\$0		\$0	\$9.85	21%	\$325,795	\$10.65	22%	\$2,852,938	\$11.47	22%	\$10,755,019	\$12.35	23%	\$23,171,698	
32																						
33	Retail China																					
34			\$42.86	\$63,226	\$42.86	\$63,226	\$28.21	\$1,922,288	\$29.62	\$6,257,046	\$31.10	\$17,738,726	\$32.66	\$39,113,891	\$34.29	\$82,139,170						
35	25%		\$14.88	\$21,952	25%	\$14.88	\$21,952	25%	\$9.79	\$667,418	25%	\$10.28	\$2,172,446	25%	\$10.80	\$6,158,886	25%	\$11.34	\$13,580,343	25%	\$11.91	\$28,518,720
36			\$2.26	\$3,338	\$2.26	\$3,338	\$1.49	\$101,497	\$1.56	\$330,372	\$1.64	\$936,605	\$1.72	\$2,065,213	\$1.81	\$4,336,948						
37																						
38			\$60.01	\$88,516	\$60.01	\$88,516	\$39.49	\$2,691,203	\$41.47	\$8,759,865	\$43.54	\$24,834,216	\$45.72	\$54,759,447	\$48.00	\$114,994,838						

Table 7 summarises the increase in value from baseline performance in the left and next from left columns. The remaining columns summarise the increase in sales by channel, produced both in Australia and as value-added products in China over time.

4.9.6 Value Created for Industry:

The legacy value for this project for wider industry is:

- Development of processes approved by Chinese government to freeze thaw Australian red-meat in final retail packaging.
- Method to retail pack product in Australia to reduce counterfeiting in country (supported by blockchain). Estimated cost of counterfeiting Australian meat in China is \$242 million/year¹. This cost has not been factored into value created for the wider industry.
- Remove costs from the distribution channel through to the end consumer, and
- Create new business models that enable more competitive connection with the end consumer, and
- Increase awareness of Australian Beef as something different (and better quality and value) than other imported red meat.

The following are some key assumptions used in the calculation of the numbers presented in **Error! Reference source not found.**:

1. Retail margin (Row 36) has been estimated in this table to demonstrate possible margins but excluded from the CIE* modelling inputs as the retailer is located out of Australia.
2. Primal costs are assumed to remain on a fixed percentage of Sales. It is assumed that as the price of raw material increases it will be offset with increases in selling price.
3. Selling Expenses – Freight (Row 7)

Cost plus model assumed for the cooperative processor value added transfer of value. Benefits from sales external to the company in Table 9 have been valued at current industry profit margins.

Table 8: Percentage attribution of value to MLA funding and the focus on beef and lamb of the project

SECTOR	PERCENTAGE ATTRIBUTION	ANIMAL TYPE	PERCENTAGE ATTRIBUTION
PRODUCERS	100%	Grain Fed Beef	38%
PROCESSOR	100%	Grass Fed Beef	62%
RETAILER	0%	Sheep Meat / Lamb	0%

CIE (Centre for International Economics) manage a general linear economic model that is used by RDC's to assess return on R&D investment dollars. The model operates at a macro program level using values averaged from across several projects.

Table 9: Project Costs

Project	Total project cost	2015-20 Costs	Attribution
V.RMH.0005	350,000	350,000	100%
P.PSH.1214	1,549,800	345,000	22%

¹ McLeod, R. (2017) Counting the Cost: Lost Australian food and wine export sales due to fraud. Food Innovation Australia Ltd.

Total	1,899,800	695,000	37%
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4.9.7 Stage 2 capability development

Argyle have identified the following four core focus areas to support the development and sustainability of an end-to-end supply chain for Australian red meat business into China:

1) Capability building in Northern Cooperative Meat Company (NCMC) for continuing supply of retail ready meat packed in Australia, utilizing frozen / thawed Australian-Chinese supply chain model

2) China processing capability development for processing Australian red meat, especially new High Value Add red meat products not considered in V.RMH.0005 stage 1 project that are not eligible and suitable for manufacturing in Australia (such as MAP packaged, Marinated and Cooked products)

3) Digital traceability – blockchain technology and trust provenance to cover livestock production – processing – Value Add processing – distribution from Australia to China – distribution to customer in China – consumer

4) Design and launch of suite of red meat products and brand (and services) that build on key market trends such as:

- Clean and healthy (free-from) and Premium Australian origin
- Chilled with Packaging format and shelf-life solution that addresses shrinkage and markdown rates and traceability
- Small outlets vs Hyper markets – portion size, ready to cook, on pack serving information that aligns with China’s growing economy, changing lifestyle which fusion of other cultures such as Vietnam Beef Soup bowl, Japanese Teppanyaki, Korean Bulgogi and Western style steaks etc.

5. Conclusion

5.1 Key findings

Argyle Case Study for the Development and China Launch of Chilled Retail Ready Australian Meat encompasses the following lessons learnt:

5.1.1 Producing and Labelling for Chinese market

- Production changes while implementing new portion sizes
- Modification of the procedures regarding packaging type
- Communication challenges facing the language barriers
- Accuracy in the specification acceptance range

5.1.2 Education and Marketing implementation

- Teaching the retailer as the first step to success
- Introducing the product to the customers
- Providing consumption information to assure eating quality

5.1.3 Commercial opportunities for the brand

- Australian businesses leading the red-meat market in China
- Argyle's sales evolution during the project

5.1.4 Impacts and consequences of the Covid-19

- Product results before the virus arrival
- Australia's largest meat-processing cooperative ban during the pandemic
- Commercial situation after market changes
- Online sales appearance as a result of the lockdown

5.2 Preliminary outputs in designing Traceability solution

This project has been instrumental in commencing the initial investigation into the advantages of a traceability platform (using blockchain technology) and the key objectives and success criteria for a traceability platform to be successfully rolled out.

Since then, and independently of P.PSH.1214, Argyle Food Group (Argyle) have partnered with KPMG Origins as the chosen blockchain based traceability platform and commenced a 6-month traceability pilot in Q3 2020.

The key objective of this stream of work is to track the Argyle end-to-end, vertically integrated supply chain from livestock production, through processing and value add processing, to distribution from Australia to overseas retail and other customers, and on to end consumers.

5.2.1 Platform Partner

There were many independent traceability platforms on the market in this space. Argyle has partnered with KPMG Origins (<https://kpmg.com/au/origins>) as the preferred traceability platform for several key reasons:

1. Scalability capabilities - both within Argyle's growing supply chain and the wider supply chain industry for economies of scale.
2. Commodity Agnostic – important for widespread uptake of the traceability solution, and therefore important to realise the benefits of economies of scale - critical for reducing build and operational costs on a per throughput basis to maximise return on investment of any financial expenditure in technology and Research & Development (R&D). Also presents opportunity to adopt innovative practices from other industries using the same traceability platform.
3. Comprehensiveness - ability to track the full end-to-end supply chain from farm to consumer, and shorter journeys in between for example purchasing raw material on the open market and processing into value-added product.
4. Agility – ability for the traceability solution to work in the complex Argyle supply chain with many moving parts, without inhibiting existing operations.
5. Implementation time – ability to analyse, develop, integrate and implement within a reasonable timeframe.
6. Seamlessness/automation of data integrations – important that the data transfers from the various ERP systems to the blockchain layer are automated as much as possible, from the perspectives of both data integrity and minimising operational overhead.
7. Industry standards – chosen solution built from ground up to comply with the global industry traceability standards to enable other tech pieces to be integrated in future as required (e.g. integrating a finance platform).
8. Global Reach and Presence – the platform provider has a global reach with presence in all locations where Argyle's clients are located.

Additionally, KPMG is a trusted brand with a well-known global presence which is highly valuable given the international nature of sales in the red meat industry.

5.2.2 Implementation Strategy and Data

Importantly, Argyle and KPMG have taken a targeted approach with regards to the pilot to ensure that the objectives of the pilot are clear and achievable. It has been important to establish an achievable and targeted scope, rather than risk under-delivering.

For this reason, the six-month pilot focuses on one product line to a specific customer (Carrefour). This strategy allowed Argyle and KPMG Origins teams to proof out a clearly identifiable, precise and controlled subset of the end-to-end supply chain traceability. A single processing facility (NCCMC) was chosen for the purpose of the pilot.

Project Timeline

The pilot is split into three strategic streams of work:

- Traceability discovery (approx. 4 weeks)

- Traceability establishment (approx. 12 weeks)
- Traceability beta (approx. 12 weeks)

Data Silos

Prior to the implementation and roll out of the traceability solution, Argyle had a high level of transparency and access to its data throughout the supply chain. The available data, while extensive, was siloed into a range of ERP and other systems managed by different parties, completely independently of one another as summarised in the table below.

Table 10: Supply Chain Data

Supply Chain Stage	Solution	Managed by
Contracting	Argyle Order Management System	Argyle
On Farm	Individual Livestock Management software (currently Stockbook)	Argyle
On Farm	Independent online tag verification	NLIS
NCMC Processing floor	Epicor	NCMC
Carcase Grading Data	Independent grading undertaken by MSA posted online	NLIS
Supply Chain Financing	Finance Platform	Argyle in HK
Freight Journey	IOT Temperature and Location Tracking Device	Emerson
Freight Confirmation	Inventory management	Carrefour

The KPMG Origins solution offers the trusted link between the data from each silo in order to provide end-to-end traceability and provenance, enabling the Argyle supply chain data to be tracked from the farm all the way through to the end consumer. KPMG Origins also facilitates data permissioning to enable data sharing with Argyle’s suppliers, buyers and service providers.

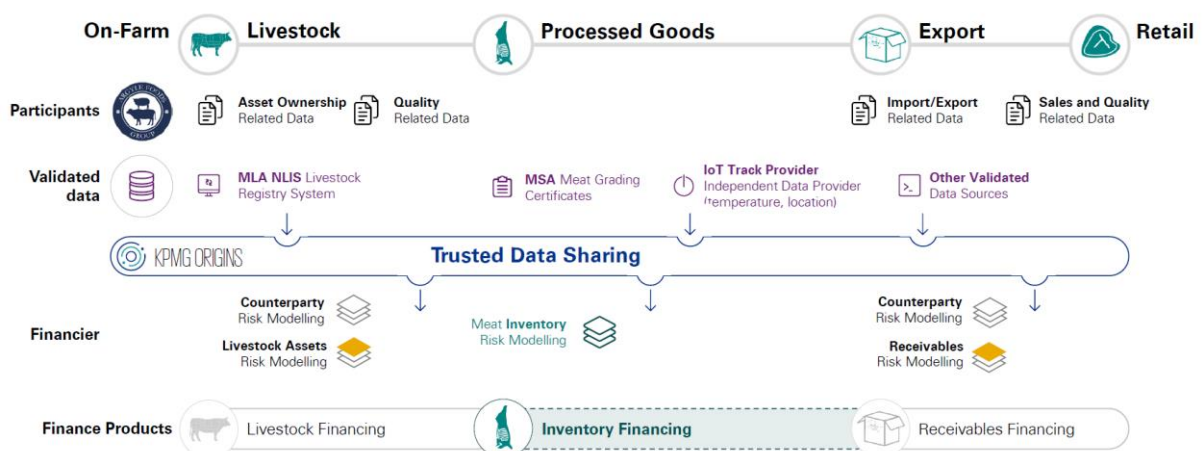


Figure 12: Argyle KPMG Origins Data platform for Traceability

5.2.3 Key Objectives

Project Objectives

There were several key objectives at the outset of the scope of work:

- Ability to track carcase back to Australian livestock.
- Validation of the data by trusted third parties (e.g. NLIS, MSA).
- Enriching trust in the product journey and quality by incorporating IoT tracking data
- Immutability of the data, so that users have confidence the data is robust and has not been tampered with (or in instances where errors corrected, the corrections are transparent).
- Associate supply chain certifications with the end product (e.g. sourced from certified humane farm, certified grass fed, independent auditor/grader certifications, etc).
- Track sufficient supply chain data to best facilitate a future project whereby a financier (outside of this scope) could utilise the data to facilitate improved working capital finance at improved rates.
- Track product quality attributes (like temperature) throughout the supply chain (to deliver on the buyer quality requirements)
- Create the asset taxonomy and make it ready for future extension with information relating to ESG, sustainability, carbon footprint etc.

Since the project has commenced, an additional objective has been added:

- Ability to track product processing back to an Australian processing plant that has stringent COVID-19 policies in place and associate the relevant certifications with the end product.

The output of this scope of work is to bundle this service off with the developed product range presented in the earlier sub-sections as a point of difference for Argyle branded offering.

COVID 19 – The Issue

Australian exports are receiving significant push-back and hurdles from importers into China for Australian Red Meat. A portion of these issues stem from the recent Covid-19 outbreaks in Australian meat processing plants coupled with claims that frozen meat can provide a transportation mechanism to Covid-19 across borders.

Despite the majority of Australian meat processing facilities having no formed cases of Covid-19, there currently isn't a trusted mechanism to communicate this with international buyers and import officials resulting in significant market access issues for Australian red meat exports, and a decline in revenue and growth.

COVID 19 - The Opportunity

To combine Australian red meat provenance and traceability data with the Australian processing and packaging plants Covid-19 policies and contamination free status. This information is then

permitted and shared with international importers in parallel with the physical red meat products.

This will continue to position Australian Red Meat Exporters as world leading and setting a new global benchmark as to the rigor consumers should demand to ensure their red meat products are safe and Covid-19 free.

The Australian red meat industry has a first mover opportunity to gain a significant global competitive advantage.

5.2.4 Challenges

There have been a number of key challenges for the additional scope of work to date.

Digital Transformation Cost

Given the infancy of standardised, connected and digitised data sets for red meat supply chain traceability generally, there is a considerable capital outlay required to digitise the Argyle supply chain to enable end to end traceability.

The traceability project is a large investment involving considerable integration work with a variety of tech platforms. Therefore, the project has become a catalyst to review existing ERP solutions and ensure the preferred long-term ERP systems are in place for long-term use to prevent the need to re-incur integration costs at a later date.

A key challenge has been identifying and transitioning Argyle's existing systems, livestock management solutions in particular, across to software solutions aligning with Argyle's 5+ year vision. Agriwebb has been identified as an individual livestock management software solution that aligns well with the Argyle 5+ year vision, the day-to-day on farm management requirements, analysis and reporting requirements and which records a suitable dataset with sufficient information to inform the KPMG Origins data layer. Agriwebb offers a number of key advantages over other product offerings in the market:

- Large scale support, analyst and developer team.
- Intuitive user interface with limited training required for use.
- Truly cloud-based solution with support for phones, tablets (incl Apple and Android) and web-based access.
- Strong appetite for innovation, with continually improving feature-set based on user feedback from large-scale user base (e.g. carbon monitoring and management, better decision-making tools).
- User-based licencing instead of device-based licencing.
- Direct integration with NLIS (eNVD).
- Added benefit of being a full farm management tool (including farm-based, mob-based and individual-animal-based management), rather than bespoke to individual livestock management. Therefore, other on-farm practices are recorded on the single platform and could be associated with the livestock.
- A large user base generates regular and current feature requests from users, which are prioritised and then built out over time with the industry in mind. Therefore, all users, regardless how active or passive their feature requests, we will reap the benefits of feedback and developments made by other farms using the platform because any

features that are built are rolled out to all users under the Software as a Service (SaaS) model, not just the farm who requested it.

Argyle has engaged with Agriwebb extensively, including trialling the software on farm at Argyle using Tru-Test hardware. However, the platform has the following hurdles:

- Substantial recurring annual fee.
- Substantial one-off setup and API establishment fee in year 1.
- Some hardware on farm will need upgrading for compatibility reasons including:
 - o Scale head
 - o Portable EID reader

Operational Processing Limitations

There are traceability limitations in the processing facility due to existing infrastructure and processing practices in Australia. For example, a primal cut can only be linked back to a group of animals via the boning batch, not to a particular animal. Where this can present a problem is when a boning batch includes animals for more than one sales order where the sales orders have different eligibility requirements. The current process cannot exclude certain ineligible animals from being linked to the batch which can mislead customers to thinking ineligible animals have potentially been processed into their primal cuts. As a result of this processing facility data limitation, Argyle have had to implement manual processes to ensure accuracy of boning batching data for sales order eligibility.

Technology already exists (and existed in a former Argyle owned and operated plant based in Nowra), whereby primal cuts and portion cuts in retail packs can be tracked back to a particular carcass and animal via Marel and similar handling equipment. However, this technology has predominantly seen adoption in the Northern Hemisphere to date.

Industry Data Limitations

Throughout the discovery stage of the project several limitations were identified with the available industry data sets for the purposes of end-to-end supply chain traceability, including:

- NLIS was established for the purposes of Bio-security but is now being used for individual animal traceability and as a result has presented some limitations including:
 - o No way of identifying when an issued tag under a PIC has been added to an animal (as opposed to sitting in an office drawer) without also integrating with livestock management software.
 - o Permissioning of third-party access to NLIS information is done based on the PIC location owner and not the owner of the cattle. This presents issues when cattle for example are agisted at another PIC, yet that PIC owner does not want to permission a third-party traceability solution to view all of the animals under that PIC (just the agisted sub-set). This is a similar case for a processor's PIC where they are unlikely to permission a traceability platform to be able to view all cattle on their PIC, when it's only relevant for a subset of their customers.
 - o Third parties do not have full history location traceability access to all PIC movements for the life of an animal. It's currently limited to only the originating PIC (the breeder) and the previous PIC. This means any movements that have

occurred in between are not available for traceability platforms to create true end to end traceability journey of an individual animal.

- eNVD use by the traceability platform has presented challenges due to:
 - o The annual fee charged to traceability platforms to be able to access eNVD's which seems misaligned to the value generated by them within the traceability platform.
- MSA grading results are not readily available to third party traceability platforms for integration. This has resulted in the processors individually investing in integration infrastructure to make the MSA data available to traceability platforms.

Covid 19 and China Export Licence

Evidence of country of origin via a traceability platform has primarily been sought after by China customers. However, with the closure of China ports in early 2020 due to Covid-19, and then the suspension of China imports from four of the major Australian processing facilities in May, the pilot has pivoted to a key customer in Taiwan to pilot the traceability.

As set out earlier in this report, Argyle are exploring other opportunities to link product back to Covid-Safe plants via KPMG Origins.

5.3 Benefits to industry

Benefits and implications to the Australian red meat industry from this additional scope of work and traceability activity undertaken to date include:

- Secure the Value, Provenance, Safety and Authenticity of Australian Meat and Livestock
- Bio security improvements through animal traceability and movements linked to an improved animal ID/NLIS system
- Asset Value measurement and protection in the supply chain to enable access to alternative and more efficient trade finance – in particular with imminent herd rebuild following sustained drought and negative cash flow implications on ability of producers restock.
- Protected and improved market access for Australian red meat exports
- Initiate a new industry standard for livestock trading, management, marketing and financing for net improvements across industry efficiency, value and sustainability.

6. Future research and recommendations

6.1 Future R&D

6.1.1 NCMC capability building for frozen thawed model

Capability building in Northern Cooperative Meat Company (NCMC) for continuing supply retail ready meat that originally packed from Australia, utilizing frozen thawed supply chain model:

- Provide portioned controlled, retail ready style of Australian beef products with freshness guarantee, longer shelf life and full traceability;
- Provide customised retail solution: Customized packaging, brand solution, sales & marketing support, product development, tailored distribution solution, retail meat cabinet solution.
- Maximize the value of Australian beef in a highly competitive market.

Consistent consumer related product performance is a vital requirement, and it is critical to better understand the link between initial raw material quality, and the value adding process treatments. A detailed knowledge of such interactions will enable consistent quality product to be produced, by either control and procurement of raw material specifications, or by adaption of the value adding process to best create and capture value.

6.1.2 China processing capability development

Argyle needs a processing solution in China. The Joint Venture with NCMC allows Argyle to secure its ability to supply all grades of beef into China as chilled or frozen/thaw retail and also as primal for direct sales and further processing within China. In arriving at innovative value chain designs which create and capture increased value for the Australian red meat industry, the current level of understanding of alternative models whereby Australian red meat is further processed in-market under the infrastructure and quality systems managed by an Australian company or a JV partner is largely unknown and once understood creates opportunities for innovative value chain designs from a both a manufacturing efficiency and capital attraction viewpoint.

China processing capability development for processing Australian red meat, especially High Value Add red meat products that are not eligible and suitable for manufacturing in Australia, such as:

- MAP packaged
- Marinated or/and meat with sauce sachets
- Ready to cook – a variety of cuts for meal solution with other components such as vegetables, carbohydrates and cooking sauces
- Cooked meat and smallgoods products

6.2 Marketing support plan

Chinese customer is facing thousands and thousands of products every day, increasing brand awareness is the primary goal of a marketing plan, the following strategies are to be considered:

Enhance brand awareness:

- ‘The Healthy Farmer’ brand Weibo
- ‘The Healthy Farmer’ brand WeChat
- Key publicity campaigns and PR – chefs + bloggers + influencers + reviews
- Tik Tok video content
- On-going digital content development

Consumer engagement

- In-store merchandising and planograms
- Retailer staff education
- In-store demonstrations
- On-pack QR codes

Monitor sales:

- Driving sales traffic on-line and in-store

Table 11: Further marketing activity plan

Marketing Objective	Awareness	Awareness	Awareness	Awareness	Awareness	Awareness	Awareness	Awareness
		Trial	Trial	Trial	Trial	Trial	Trial	Trial
			Purchase	Purchase	Purchase	Purchase	Purchase	Purchase
In Store Activity	POS	POS	POS	POS	POS	POS	POS	POS
	On Pack Stickers	On Pack Stickers	On Pack Stickers	On Pack Stickers	On Pack Stickers	On Pack Stickers	On Pack Stickers	On Pack Stickers
	Sampling	Sampling	Sampling	Sampling	Sampling	Sampling	Sampling	Sampling
	Price Promotion	Price Promotion	Price Promotion	GWP - Book	Price Promotion	Price Promotion	Price Promotion	Price Promotion
Digital Activity	WeChat	WeChat	WeChat	WeChat	WeChat	WeChat	WeChat	WeChat
	Weibo	Weibo	Weibo	Weibo	Weibo	Weibo	Weibo	Weibo
	Weibo Ads	Weibo Ads	Weibo Ads	Weibo Ads	Weibo Ads	Weibo Ads	Weibo Ads	Weibo Ads
	Weibo lottery	Weibo lottery	Weibo lottery	Weibo lottery	Weibo lottery	Weibo lottery	Weibo lottery	Weibo lottery
	KOLs	KOLs	KOLs	KOLs	KOLs	KOLs	KOLs	KOLs
Digital Content Focus	Brand Introduction / Awareness	Brand Introduction / Awareness / Sponsorship Activation	GWP	GWP	Brand Introduction / Awareness / International Sports Event Sponsorship Activation	Brand Introduction / Awareness / Australia Week Activation	Brand Introduction / Awareness / China CIIE	Brand Introduction / Awareness / Drive to store for Sampling and Price Promotions

6.3 Implementation of digital integrity system

The implementation steps are to work with red meat supply chains to scope the development of a digital integrity system from uniquely identified cattle to final retail products.

Implementation steps:

- 1) Integration of digital integrity systems into robust business models.
- 2) Identification of premium Chinese markets willing to pay a premium for digital integrity systems.
- 3) Discouraging a ‘silver bullet’ approach or bias toward specific technology solutions, particularly given the lack of interest from Chinese customers in the actual technology.
- 4) Strategic consideration of the commercial implications for Australian red meat companies when/if product integrity is compromised in China.
- 5) Building low-cost digital integrity system prototypes for trialling, prior to investing in more expensive commercial systems.

Table 12: Implementation period

TASK	Months	1	2	3	4	5	6	7	8	9	10
Datapoint Collection and Integration											
Configuration of Trust Provenance											
Consumer Application build out											
Implementation and training across the supply chain											
Crypto coin ready and cloud storage ready											
Support and Maintenance											+

6.4 Traceability Project - Beyond the 6 Month Pilot

Beyond the 6-month pilot, the intention is to rapidly:

- Expand the traceability to track other product lines that are currently being supplied to customers other than Carrefour, with a particular focus on China.

- Expand the traceability to track product lines at other facilities e.g. Tabro facility in Victoria, and Alacarte facility in Qld.

Finance opportunity

The second phase of the project is to enable improved finance on KPMG Origins due to the traceability platform providing financiers (or insurance) increased visibility to standardised and trusted inventory information.

Traditional supply chain finance solutions are not providing finance throughout a core section of vertically integrated supply chains due to the lack of visibility of the asset and its quality conditions.

This is an issue for Argyle as:

- Exporters are forced to repay livestock purchase loans before they're able to access receivables finance.
- There is a high administration overhead to service loans from multiple providers for specific and short sections of the supply chain.
- Argyle estimates that at any given time, AUD 1.8-3.6M worth of inventory is unfinanced within the Argyle supply chain.
- Closing the finance gap would enable Argyle to expand export volumes ~50% over 6 months.

Collaboration between service and platform providers enables an unprecedented level of trust and transparency of meat value chains and creates a unique opportunity for a financier to provide seamless financing along the entire value chain.

Other future opportunities

This traceability project lends itself to several other opportunities within the industry (outside of the scope of the traceability pilot):

- Real-time animal identification and tracking – adding a 'real-time' tracking component to the individual livestock management platform. There are many use cases for this:
 - o Further validation for financiers that the livestock exist and are at the declared location.
 - o Operational benefit of automatic alerts when livestock leave a particular geofence (i.e. paddock).
 - o Improved data for analysis and other tools (e.g. proactive removal of livestock from program or reactive product recall) such as detecting which animals have been within the vicinity of a contamination site such as a battery disposal pit or rubbish tip.
- Improved on-farm risk management – via more informed data-driven decision making. For example, analysis of carcass results against on farm growth traits, feed types and paddocks.
- Automatic detection and validation for improved robustness of product claims. For example, spot testing for chemical residues in carcasses to validate claims such as hormone free and antibiotic free.

- Genotyping as a validation of breed claims. For example, spot testing DNA in carcass samples to validate claims such as Angus, Angus-Cross, etc.
- Linking on-farm carbon management achievements to the end-product – The red meat industry in Australia has set a carbon neutral target by 2030 and Argyle could be at the forefront of both reducing/eliminating net carbon emissions on farm and immutably translating the on-farm benefits to the consumer via the product.

Since platforms like KPMG Origins are designed to enable broader use cases connected to the red meat industry, the Argyle project opens additional benefits including:

- Recall of asset in case of maturing value chain risk
- Consignment automations and document management
- Cross-jurisdictional regulatory compliance and asset compliance checks
- Environmental impact reporting associated with products within the supply chain

6.5 Ongoing Collaboration with MLA

In parallel with the traceability activities, Argyle has had ongoing discussions with MLA to investigate further research and development partnerships.

Argyle had an initial kick-off meeting with MLA in November 2020 with senior representatives from each of the key MLA departments. As an outcome of that meeting, MLA allocated an MLA shadow-person to the Argyle office for a 1-week period across December 2020 and January 2021 to work with the team and identify synergies between Argyle's day-to-day business, including key industry pain points, and MLA's internal R&D objectives to identify future collaborative research opportunities that would be worth exploring.

The key outcome of the 1-week co-location was to identify:

1. 3–5-year MLA / Argyle collaboration strategy document, broken down by Data & Digital, Markets & Insights, Off-Farm and On-Farm.
2. 3–5-year MLA / Argyle collaboration proposition document, broken down by Data & Digital, Markets & Insights, Off-Farm and On-Farm.

Next steps are to present these two documents back to the wider MLA team and work closely with them to structure a 3-5 year collaborative framework.

7 References

Personal communications from Argyle team and industry insiders have been used along with the following sourced references:

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