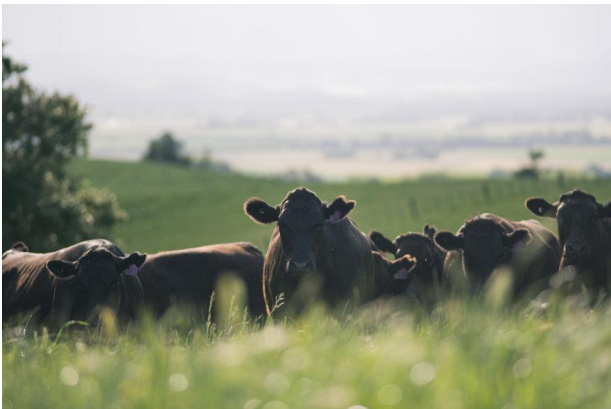




# GRASS-FED WAGYU



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Final report

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Evaluation of the  
Primary Growth  
Partnership Marbled  
Grass-fed Beef  
Programme

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29 May 2020

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NIMMO-BELL & ASSOCIATES  
A Division of the Prime Group

In association with

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<sup>1</sup> Photo credits: <https://www.firstlight.farm/news-media/heart-health-in-men-unaffected-by-eating/>;  
<https://www.firstlight.farm/in-the-beginning/our-wagyu-farmers/pukenui/>;

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## **Disclaimer**

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# Executive Summary

This report reviews the Marbled Grass-fed Beef (MGB) PGP Programme carried out between the New Zealand Ministry of Primary Industries (MPI), Firstlight Foods Limited, Firstlight Wagyu (NZ) Limited and Brownrigg Agriculture Group Limited over a seven-year period from 2012 to 2019.

The report is the result of an independent evaluation commissioned by the MPI Sustainable Food and Fibre Futures team. The evaluation assessed the achievements and expected outcomes from the MGB PGP Programme against key performance indicators, reviewed the Programme's execution and governance and has identified lessons that would benefit other MPI investment programmes, as well as the future activities of this initiative.

Overall, this evaluation has shown the MGB PGP to be a successful and worthwhile one for all parties involved.

## Performance against targeted outcomes

All the targeted short-term outcomes (for the period 2014-16) have been achieved in whole, or in part. Those not achieved are likely to be achieved, albeit over a longer timeframe than originally planned.

The supply of calves from the dairy industry is well-established, with 80% of First Light Grass-Fed Wagyu cattle now derived from that source. A strategic partnership with the Livestock Improvement Corporation (LIC) has been pivotal to that achievement.

First Light Grass-Fed Wagyu is produced all year round, with volumes falling off in only one month of the year due to annual plant shutdown.

The Go-Direct marketing model is well established in New Zealand and on the West Coast of the USA. Other markets have proved more difficult to penetrate.

The medium-term outcomes for the period ending 2020, relating primarily to added-value and volume targets, are yet to be fully achieved. They are expected to be achieved over a longer term timeframe.

A long-run farm-gate price premium target of \$2.12/kg for First Light Grass-Fed Wagyu over the prime steer commodity price has not yet been attained, however is moving in the right direction, with premiums ranging from \$0.80 to \$1.22 throughout the life of the Programme. Recent global market disruptions due to the Covid-19 pandemic have seen the price premium for the product increase to a high of \$2.93 in April 2020. That shows the strength of the market position being achieved.

A target annual volume of 30,000 head has not yet been reached, however is feasible by 2025/26.

There were no targets set for the outcome related to increased profitability of the prime beef industry, nonetheless, the support from farmers and qualitative feedback suggests the profitability of adding Wagyu to their operations is positive. In addition, Farmax analysis for three types of finisher systems published in April 2020 demonstrates profitability of First Light Grass-Fed Wagyu and indicates higher returns than those obtained in typical prime beef operations.

Long-term outcomes (2020-30) did not have key performance indicators (KPIs) applied to them. However, measures for the first long-term outcome *"NZ prime beef repositioned from commodity to a stable, high returning, premium position in world markets"* could include a significant and durable market share of relevant niche market(s) with price relative to a reference point for in-market prime beef in the top quartile of prices for a given time duration (e.g. over 10 years), and relative farm EBITDA<sup>2</sup> for New Zealand prime beef production that is in the top quartile.

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<sup>2</sup> Earnings before interest, taxation, depreciation and amortisation

The KPIs for the second long-term outcome “*Proven business model for producing and marketing high value food products*” could include sector awareness of the MGB model amongst high value food manufacturers and the number of emulators with either Wagyu prime beef, other prime beef, other red meat, non-red meat and non-meat products.

The MGB final report (see footnote 6) identified a number of emulators including two Wagyu marketers, two non-Wagyu prime beef marketers and a non-red meat small goods model.

Economic assessment, using the New Zealand Treasury Guidelines, estimated that the overall economic benefit-cost ratio (BCR) from the Programme investment is around 2.0. This is a good BCR, confirming the MGB Programme has been a worthwhile investment for New Zealand. An economic impact assessment done by a different methodology was also reviewed. Adjustments were made to calculate net economic benefits.

The approach to governance and programme management evolved and strengthened significantly throughout the life of the programme. It was acknowledged that the scale and longevity provided through the PGP enabled “things to be done properly”, this sentiment including the value of dedicated programme management expertise and formal governance structures that were implemented, including in the latter stages, an independent Chair. It was also noted that having dedicated programme management and governance expertise within First Light through the PGP programme had spillover benefit to thinking and management elsewhere in the business.

The programme built a sound base through a significant scientific and technical focus on Wagyu genetics, farming and processing. This information base was well compiled into useful tools for farmers and has been a significant contributor to programme success. Equally, the specialist skills and industry-specific focus of LIC supported both connection to, and understanding of, the dairy sector.

## Lessons learned

In undertaking the interviews for this programme, there was an overwhelming sense from value chain participants and other stakeholders that MGB has sought to innovate widely (across both on-farm and in-market components) and has generated significant success with respect to what it set out to do. The difficulties associated with respect to the breadth of innovation are not to be underestimated, and the lessons and future challenges identified here should be seen in the context of building on an already strong base.

It has been apparent throughout this review that value chain participants have derived significant value through the integrated and unified value chain model created by MGB. This has arisen for a number of reasons; strategic, financial, values-linked and social. A key insight here is that financial motivators for farmers are not the only driver, or possibly even the most important driver for participation and commitment.

To this end, farmers identify benefits in being associated with a value chain community of like-minded operators. They were motivated by being involved in the production and delivery of high-quality products to known markets, and the clarity of market connection provided by MGB was a powerful motivator.

Despite this, there remain opportunities through improved communication and the provision of further technical information to build this on-farm connection.

This includes increased value chain communication and visibility in both directions: connecting farmers to the market so that they understand what and how they need to produce, and also the market to farmers to demonstrate the value of the extra work undertaken by farmers within the value chain.

Enhanced communication is also required at the points of connection or the interfaces between value chain participants, with each participant knowing what they will receive and having confidence in the quality of this input. These connections are critical as everyone relies on everyone else doing a ‘good job’ to ensure a high-quality product can be delivered to the consumer.

There are also opportunities to better align FLF and LIC activity with dairy industry breeders at the start of the value chain and to connect them more visibly into the value chain and the markets for the product.

An increased focus on extension and farm system management support is required to both support existing suppliers and potentially to provide sufficient confidence for new suppliers to become involved. Areas for farm extension focus include utilisation of Wagyu genetics on dairy farms for effective calf rearing through the early stages of a calf's life, as well as the nutritional and broader farm management requirements to deliver the levels of marbling sought by MGB on a consistent basis and to enable the improved returns (monetisation) these deliver to farmers. Once this implementation of existing knowledge is fully explored, it may be that further research questions and areas for investigation arise.

Financial returns do remain important, despite the attractiveness of the non-financial benefits, and must continue to be enhanced. The length of the MGB value chain and the challenges related to both high animal prices and poor cash flow were both raised by producers and should continue to be a focus for First Light as they seek to evolve their business models further and grow the supply base.

It should also be noted that participation in the MGB value chain is unlikely to suit every farmer. Animals must be managed differently to traditional beef operations and this requires farmer culture change. Equally however, farmers note the complementary nature of the MGB system within their overall farm business and most saw a ceiling around a third of their stock linked to MGB beef production.

## Conclusions and recommendations

Overall, this review has shown the MGB PGP programme to be a successful and worthwhile one for all parties involved, and one that has considerable demonstration value both within the red meat sector and across the primary industry more generally.

Key 'take home' messages, particularly in relation to consolidating and building on the benefits achieved so far are summarised below for FLF and commercial partners:

### **Stronger farmer connection and support**

It is evident from the interviews undertaken in this analysis that those farmers involved see both monetary and 'values-based' benefits through their involvement in the MGB programme. There are some concerns however, and addressing these provides benefit not only to existing suppliers, but also the ability to scale operations through attracting additional suppliers of the right mindset over time. These include:

- Concerns regarding the high cost of stock purchases.
- The need for further genetic information on Wagyu and bull selection.
- The need to better support farm management practice for the delivery of the required marbling scores to monetise farmers' management effort, through farmer extension programmes. This is important for farmer confidence in the system and product, and most farmers see a ceiling for MGB in their operation (whole-farm or beef component).
- The opportunity for on-farm management additional focus on:
  - Consistency of the animals (the 'product') received both across and within groups by the various supplier stages (e.g. a group of calves received by a calf rearer);
  - The use of Wagyu genetics on dairy farms needs focus with respect to management (joining and calf management); and
  - Driving the beef farming culture change that is required amongst the producer group to deliver the outcomes needed for Wagyu.

### **Amplify the power of the MGB model**

A stand-out feature of discussion with suppliers was their desire to be part of a market-linked supply chain such as that developed by MGB. This is about alignment of 'values' and not just economic return. Given that, there is a significant opportunity to support business development by building on this connection to the 'why'. Key points include:

- The difference of MGB product is powerful;
- The FLF culture is powerful; and
- Market visibility is engaging.

### **Build a stronger supply chain**

Given this values alignment, there are a range of means through which supply chain connections can be strengthened for the joint benefit of all participants. Key points include:

- There is good resonance between the issues raised by FLF and supply chain participants. This is positive.
- Need to increase supply chain communications and education; including with and through LIC to the dairy sector as well as on-farm technical extension.
- Aim to streamline – breeder + calf rearer + grower/finisher; encouraging specialisation and alignment.
- Develop an integrated IT platform to facilitate planning, forecasting and supply chain management.

### **Things to think about in-market**

A number of opportunities were noted by in-market participants, including:

- Compostable packaging presentation.
- Premium retail-ready meals to utilise a wider range of cuts.
- Geographic diversification.

### **Governance**

From a First Light perspective, with the transition away from the project structures of MGB, there is an opportunity to consider how the governance benefits demonstrated through the PGP can be institutionalised in the company's mindset and structure going forward.

There were also learnings and insights provided through the review process that have benefit for MPI from the perspective of an investor and programme manager. These include:

- The need to maintain consistency of appropriate programme staff engaged in programmes and with investors.
- The need to develop effective 'on-boarding' processes for those taking up governance roles within similar projects and programmes. This includes careful consideration of the context and role of the governance group and would be applied to all those with governance roles.
- Use the learnings from this successful PGP to inform the management and design of other programmes.
- Use the New Zealand Treasury Guide for economic cost-benefit evaluation.
- Stay in contact with programme partners post-PGP to continue to learn from successes and provide a channel for these initiatives to continue to work productively with Government.

# 1 Introduction

## 1.1 Objectives, approach and structure

All Primary Growth Partnership (PGP) programmes undergo end-of-programme evaluation. This evaluation report considers the Marbled Grass-fed Beef (MGB) PGP Programme and has been commissioned by the Ministry for Primary Industries (MPI) Sustainable Food and Fibre Futures team. The evaluation process and this report seek to:

- Assess the achievements and expected outcomes from the MGB PGP Programme (the Programme), including results against key performance indicators;
- Review the Programme's execution and governance; and,
- Identify lessons that would benefit other MPI investment programmes, as well as the future activities of the Programme.

The approach to this evaluation involved:

- Desktop review of key programme documents including the outcome logic model, final programme report, progress review report, economic benefits analysis and associated Excel model, annual plans, quarterly progress reports, and supplier survey reports;
- A site visit to Firstlight Foods (FLF) in Hawke's Bay to meet Programme partners;
- Interviews, both face-to-face and by remote means, of Programme partners' staff and management, including internal stakeholders (PGP investment manager, MPI Hawke's Bay officer and investment director, Programme Steering Group (PSG) chair and members, Investment Advisory Panel (IAP) member, Brownrigg Agriculture Group Chairman, On-Farm Research (OFR) CEO, FLF relationship manager for producers and sales, PGP Programme Manager) and external stakeholders (sample of producers<sup>3</sup> across the value chain, retail partners in New Zealand and the United States, North Island and South Island processors, calf supply partner Livestock Improvement Corporation Ltd. (LIC))<sup>4</sup>; and;
- Quantitative and qualitative analysis, including key performance indicators (KPIs), economic modelling, and supplier data trends.

This report starts with a background on the Programme. For the next three sections, the main body addresses:

- Outcomes and benefits - what has been accomplished by MGB so far and what are the benefits of MGB to New Zealand?;
- Execution - how well was MGB executed?; and,
- Lessons Learned - what are the lessons from MGB and the implications for other programmes and to Sustainable Food and Fibres (SFF) Futures as a whole?

This report ends with conclusions and recommendations.

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<sup>3</sup> Producers and suppliers are used interchangeably to refer to the MGB supply chain from breeders (calf producers), calf rearers, backgrounders, finishers or any combination thereof for part or fully integrated operations.

<sup>4</sup> Please see Appendix 1 for list of stakeholders interviewed.

## 1.2 Background

The MGB Programme is a \$22.5 million 7-year partnership between Firstlight Foods (FLF), Brownrigg Agriculture Group (BA) and Firstlight Wagyu NZ (FLWNZ) as commercial partners, and the Ministry for Primary Industries (MPI). The Programme commenced in August 2012.

The Programme's vision was "to have New Zealand beef prized globally as a high quality, specialty 'centre of the plate' meat through the development of high quality, marbled, grass-fed beef produced via an integrated value chain, connecting the farmer to the consumer." The Programme was estimated to have long-term cumulative New Zealand GDP impact of \$602 million<sup>5</sup> for the period 2013-2028.

Marketable attributes of the premium beef product cover eating quality, production (grass-fed, non-GMO and antibiotic free), provenance, animal welfare, health benefits and environmental sustainability. The Programme aims to deliver premium returns to all parts of the value chain<sup>6</sup>.

The means through which these product attributes were executed are further detailed in Table 1.

*Table 1: Delivery of product attributes*

Product attribute	Execution (delivered by...)
Premium grass-fed beef	Wagyu beef, known internationally for its high marbling, superior eating quality and premium image.  100% Wagyu genetics over New Zealand dairy and Angus dams to produce cattle with 50% Wagyu genetics grown solely on grass.
Connecting the farmer to the consumer; Short, direct value chain to consumers using a 'Go-Direct' model	Direct to Consumer – the First Light 'Steak Club' in the US, and First Light branded products with retail partners in Go-Direct markets in the USA and NZ.
Eating quality Positioned globally as 'the best beef in the world'	Won Gold in the World Steak Challenge in the UK and Ireland in 2018 and 2019.  The best in brand in the NZ Steak of Origin awards in 2018.
Provenance and production attributes: grass-fed, non-GMO and antibiotic free	'No Antibiotics or added Hormones ever' label in 2012  A founding member of the non-GMO beef programme in 2014 for the label 'Non-GMO Verified'.
Animal welfare	'Certified Humane' accreditation in 2018.
Health benefits and environmental sustainability	Plans underway for future attributes around human health, social responsibility and the environment.

Source: FLF, 2019. MGB PGP Final Report 2019

<sup>5</sup> Economic Solutions Ltd., 2017. Updated National Economic Impact Assessment of Marbled Grass-fed Wagyu Beef Project, 3 May 2017.

<sup>6</sup> FLF, 2019. MGB PGP Final Report 2019

To deliver the programme vision, MGB was structured into four objectives or outputs as illustrated in Table 2.

*Table 2: Programme objectives, lead partner, priorities and milestones*

Objective and lead	Priorities	Milestones
Genetics – BA	<ul style="list-style-type: none"> <li>• Genetics for high quality grass-fed Wagyu</li> <li>• Most promising genetic improvement technology</li> </ul>	<ul style="list-style-type: none"> <li>• Best genetics for marbling in grass-fed beef</li> <li>• Application of new technologies to the beef and dairy industry</li> </ul>
Supply chain – FLF	<ul style="list-style-type: none"> <li>• Producer group model for year round supply of grass-fed Wagyu beef</li> <li>• Integration with dairy industry for Wagyu x dairy calves supply</li> </ul>	<ul style="list-style-type: none"> <li>• Understanding farmers' motivations</li> <li>• Producer group establishment and operations</li> <li>• Dairy industry integration</li> </ul>
Marketing – FLF	<ul style="list-style-type: none"> <li>• Model for direct marketing/selling of grass-fed Wagyu beef to NZ and international consumers</li> <li>• Direct to consumer channel (e.g. online steak club with high marbling 6+) to support the Go-Direct markets and develop a channel for high marbling product</li> </ul>	<ul style="list-style-type: none"> <li>• Global virtual office</li> <li>• Go-Direct markets NZ, UK/EU, UAE, and US</li> </ul>
Production R&D - OFR	<ul style="list-style-type: none"> <li>• Wagyu progeny performance from dairy dams to support supply chain growth through the dairy industry</li> <li>• Feeding systems for improved growth rates and marbling</li> <li>• Efficiencies of Angus versus Angus x Jersey beef breeding cows</li> </ul>	<ul style="list-style-type: none"> <li>• Utilisation of surplus dairy calves for prime beef production</li> <li>• Improving returns through alternative forages and management systems</li> <li>• Efficient beef cows</li> </ul>

Over the seven-year life of the programme, MPI and the commercial partners contributed \$11 million and \$11.5 million respectively, across the four objectives (see Table 3). The supply chain and marketing objectives accounted for 70% of total investment.

Table 3: Programme investment by objective and investor (\$'millions)

Objective	MPI	Partners	Total	% of total
Genetics	2.1	2.1	4.2	19%
Supply chain	5.1	2.5	7.6	34%
Marketing	2.5	5.5	8.0	36%
Production R&D	0.8	0.9	1.7	8%
Management	0.5	0.5	1.0	4%
Total	11.0	11.5	22.5	100%

## 2 Outcomes and benefits

**TOR: What has been accomplished by the Programme and what are the benefits that have been delivered and expected to be delivered for New Zealand?**

In preparing this report and analysis, we have considered outcomes by looking along the value chain (a schematic and simplified representation of the MGB value chain is shown in Figure 1).

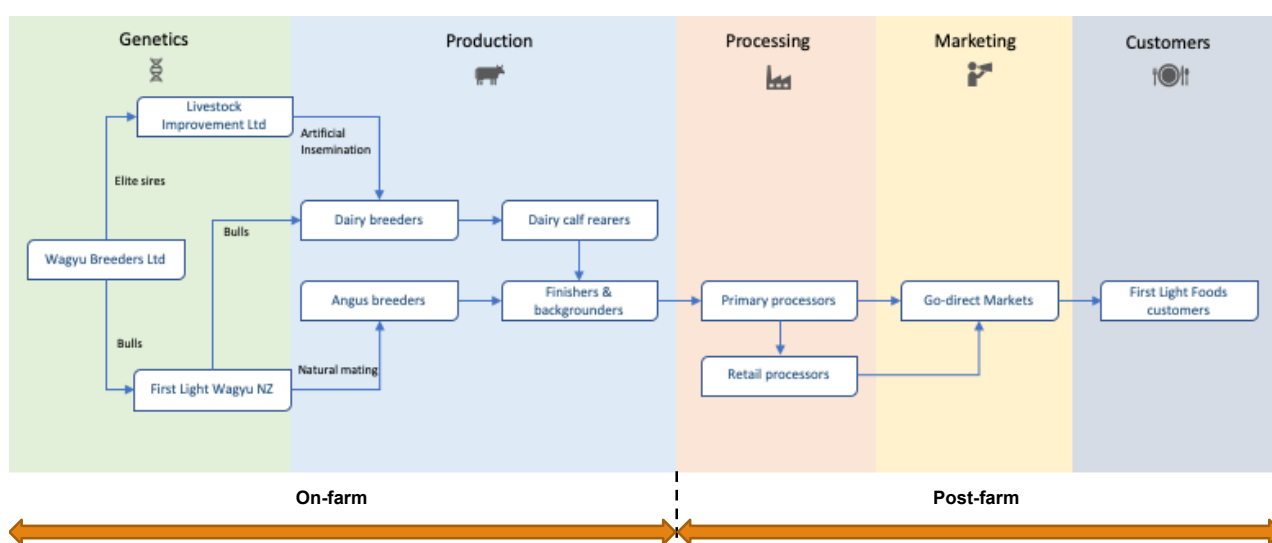


Figure 1: The MGB value chain

### 2.1 Achieving outcomes

**TOR: Identifying progress towards achieving the Programme's intended short, medium and long-term outcomes as set out in the contract and the Outcome Logic Model.**

MGB set out short, medium and long-term outcomes (Table 4) across three time horizons from 2014 to 2030 in the Outcome Logic Model.

Table 4: Programme outcomes

Time horizon	Outcomes
Short-term (2014-2016)	<ul style="list-style-type: none"> <li>Proven model for supply of calves from the dairy industry</li> <li>Proven model for year round production of marbled grass-fed Wagyu beef</li> <li>Proven model for go direct marketing to NZ and 5 international markets</li> </ul>
Medium-term (2016-2020)	<ul style="list-style-type: none"> <li>Increased sales price, sales volume and profitability of the New Zealand prime beef industry</li> </ul>
Long-term (2020-2030)	<ul style="list-style-type: none"> <li>NZ prime beef repositioned from commodity to a stable, high returning, premium position in world markets</li> <li>Proven business model for producing and marketing high value food products</li> </ul>

Source: MGB OLM (2016)

The next three sub-sections discuss the achievement of these outcomes, summarised in Figure 2.

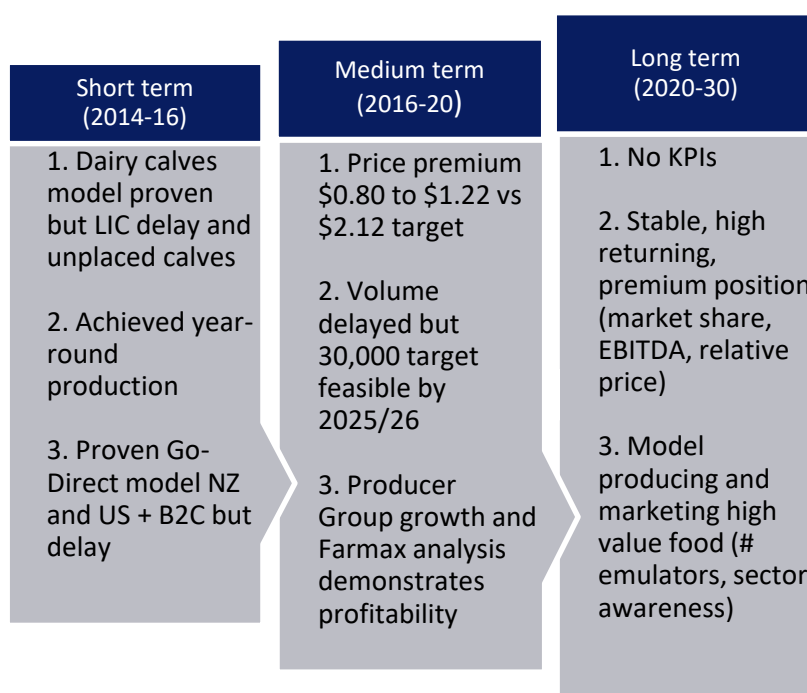


Figure 2: Achievement of outcomes vs Outcome Logic Model

### 2.1.1 Short-term outcomes (2014-2016)

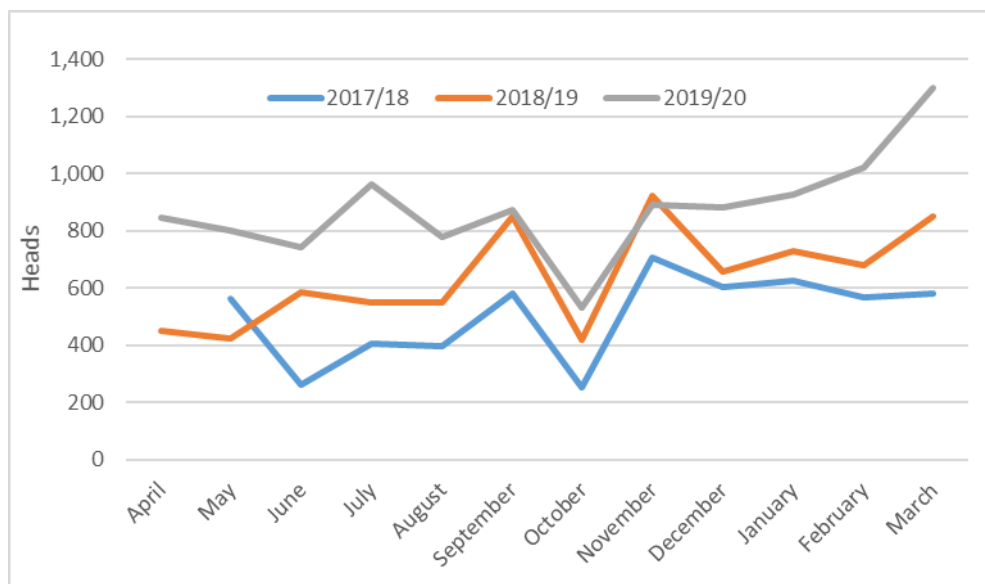
All the short-term outcomes have been achieved in whole, or in part. Those not achieved are likely to be achieved, albeit over a longer time-frame than originally planned.

The model for calf supply from the dairy industry has been achieved, however challenges remain in terms of quantity and cost. The quantity challenge relates to underachieving the target calf supply numbers due to the delay in developing a relationship with LIC until 2017/18. The LIC relationship scaled up calf supply, growing by 90% in 2017/18, with dairy calves accounting for 80% of total Wagyu calves in 2018/19.

The cost competitiveness challenge pertains to unplaced calves, with up to a quarter of calf supply not absorbed by the producer group, partly due to higher calf price (discussed further in section 2.2.7), requiring the calves to be retained by FLWNZ.

The model for year-round production of marbled grass-fed Wagyu beef has been achieved with stable monthly production, except for October when processors conduct their annual plant shutdown.

Figure 3 shows monthly production over the past three years with the standard deviation of monthly production in a year improving (reducing) from 28% to 20%. The key factors for the year-round production model include two calving seasons, a winter premium, specialist winter finishers, farms spread geographically across the North and South Islands, the addition of a South Island processor and a 3-month shorter finishing for heifers.



Source: Data provided by FLF

*Figure 3: Monthly production (2017/18 to 2019/20)*

The Go-Direct marketing model for New Zealand and international markets has been achieved with 75% of sales mix derived from FLF branded products available through retail partners in New Zealand and the United States (US) and a direct-to-consumer FLF 'Steak Club' in the US. However, this is conceded as a narrow and deep market with sales penetration mostly on the US West Coast.

### 2.1.2 Medium-term outcomes (2016-2020)

The medium-term outcomes for the period ending 2020 mostly remain to be achieved.

The price premium target of \$2.12/kg is yet to be achieved but is moving in the right direction with premiums ranging from \$0.80 to \$1.22 throughout the life of the Programme. The components of the target price premium are:

- Wagyu base premium (\$1.30)
- Productivity premium from improved marbling and production gains (+\$0.32)
- Go-Direct market premium from capturing importer/distributor margin (+ \$0.50)

While there is no actual data on price premium breakdown by component, it appears to have struggled to deliver the Wagyu base premium, as the price premium hardly reached \$1.30 as a 12-month moving average for the period April 2016 to April 2020. Prior to February 2020 (and the Covid-19 global pandemic), there were seven months where premium exceeded \$1.30, then reduced in succeeding months (Figure 4). In the past three months, the premium exceeded \$1.80 and reached \$2.93 in April 2020.

To maintain this premium level, Wagyu price needs to stay elevated above \$7 while P2 steer price needs to stay depressed below \$5. In the past four years, there were only three months when Wagyu exceeded \$7 and this occurred fairly recently. In the same period, P2 steer price only went below \$5 in the past three consecutive months, the Covid-19 period.

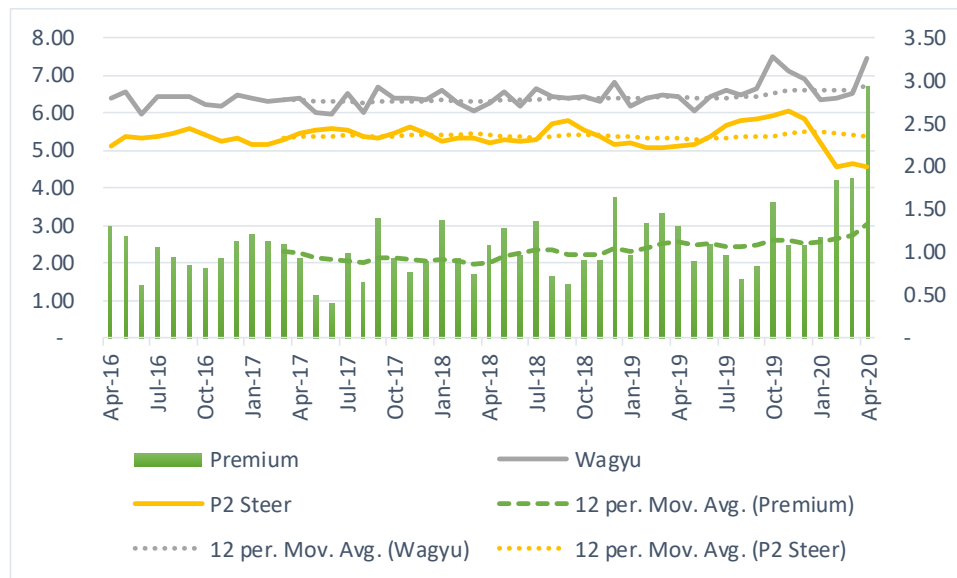
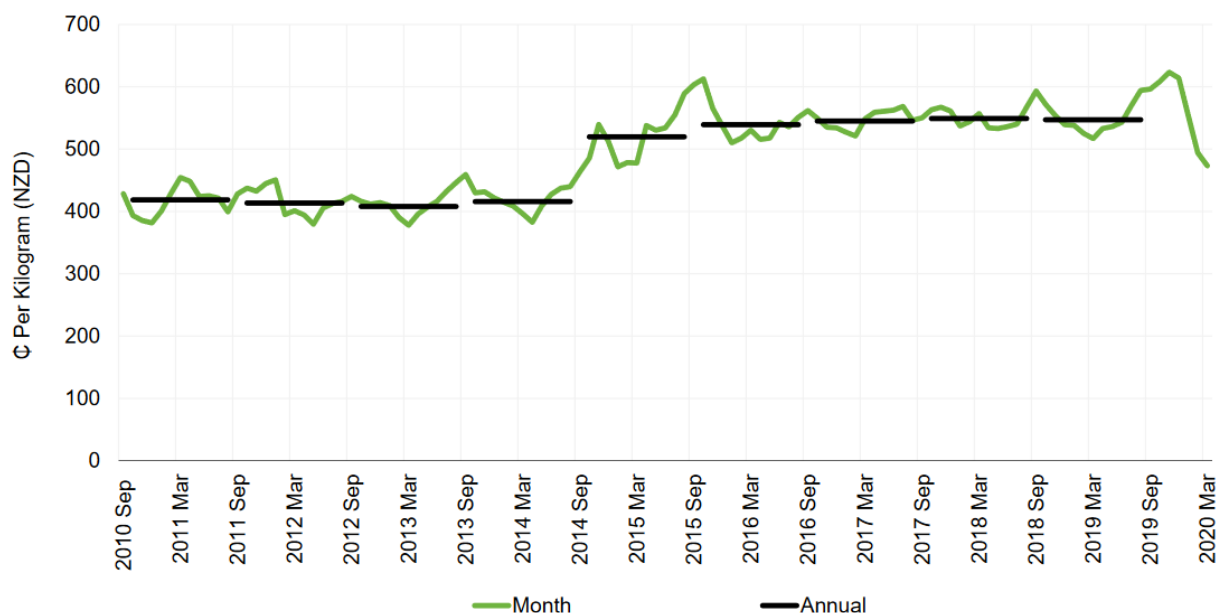


Figure 4: Prices for Wagyu and P2 steer and the premium attained: April 2016 to April 2020 (\$/kg)  
(N.B. left axis for Wagyu and P2 Steer; right axis for premium attained)

Over the past decade, P2 steer annual average price was below \$5 only during the first four years (Figure 5)



Source: Beef + Lamb New Zealand Economic Service

Figure 5: P2 steer and heifer price (September 2010 - March 2020)

The strategy to achieve the target premiums includes '5<sup>th</sup> quarter' carcass optimisation, doubling the US retail network, exploring the China market, expanding the B2C (business-to-consumer) channel including a steak restaurant model in the US and potentially in the New Zealand, UK and China markets, and improved marbling R&D (discussed further in section 2.7).

The increased volume target has taken longer to achieve than planned, however a target of 30,000 cattle processed in 2025/26 from 10,567 in 2019/20 is feasible (see discussion in section 0).

While there were no targets set for the outcome related to increased profitability of the prime beef industry, nonetheless, the support from farmers and qualitative feedback suggests the profitability of adding Wagyu to their operations is positive.

In addition, Farmax analysis for three types of finisher systems published in April 2020 demonstrates profitability of First Light Grass-Fed Wagyu, however not in comparison to commodity prime steer.

### 2.1.3 Long-term outcomes (2020-2030)

The achievement of long-term outcomes through to 2030 is difficult to assess due to a lack of key performance indicators (KPIs) for these outcomes. While the GDP impact between 2013 and 2028 can be considered a general key performance indicator, it does not clearly reflect the long-term outcomes.

The KPIs for the first long-term outcome “NZ prime beef repositioned from commodity to a stable, high returning, premium position in world markets” could include a significant and durable market share of relevant niche market(s) with price relative to a reference point for in-market prime beef in the top quartile of prices for a given time duration (e.g. over 10 years), and relative farm EBITDA for New Zealand prime beef production that is in the top quartile.

The KPIs for the second long-term outcome “Proven business model for producing and marketing high value food products” could include sector awareness of the MGB model for high value foods and the number of emulators with either Wagyu prime beef, other prime beef, other red meat, non-red meat and non-meat products. The MGB final report (footnote 6) identified a number of emulators including two Wagyu marketers, two non-Wagyu prime beef marketers and a non-red meat small goods Go-Direct model.

## 2.2 Benefits to value chain partners

***TOR: Whether the Programme delivered significant beneficial outcomes to the Programme partners, the broader industry, and to New Zealand.***

### 2.2.1 Genetics and breeding

A number of outcomes and benefits were delivered to, or through, the genetics and breeding components of the Programme (see green section of Figure 1). A strong technical/research and development focus in the early programme stages, involving Brownrigg Agriculture and On-Farm Research, enabled Wagyu genetics to be a deliberate and designed input to the MGB supply chain. This connection to the market along the value chain with adjacent chain participants was noted as helping learnings on how to partner more effectively with others.

The evolution of this genetic differentiation over time has in turn created the niche positioning First Light now enjoys i.e. marbled, grass fed Wagyu beef.

The scale and longevity of the PGP programme were also noted with respect to this underpinning science in the area of genetics. Work such as this takes time and requires funding longevity if the benefits are to be seen and commercialised. The PGP programme provided this scale and longevity.

With respect to breeding, the integration of the beef and dairy sector is a notable highlight of the programme. It has enabled diversification opportunities for dairy farmers as well as adding value, both financial and ethical, to a dairy industry by-product - the bobby calf. The differentiated genetics and product-specific supply chain also create complementary opportunities for sheep and beef farmers, with different characteristics (e.g. timing, management) when compared to lamb finishing or bull beef operations when integrated within a single farm.

## 2.2.2 Production

A number of participants sit within the production component of the value chain (see blue section of Figure 1) including breeders, rearers and finishers. In discussions about the Programme, these participants noted an array of benefits available to them. The benefits described were not just financial, but social and other non-financial benefits were also highlighted.

Again, the diversification opportunity provided for both dairy farmers and sheep and beef farmers was highlighted.

From a purely dairy perspective, the benefit and potential benefit of Wagyu cattle with their smaller birth weights and its contribution to increased ease in heifer calving. Both dairy and sheep and beef farmers also noted the value provided through the financial certainty and viability delivered through MGB contracts.

Interestingly, farmers noted widely the benefits available to them from the perspectives of ethical production systems, market visibility and social connection. These were seen as being important to them and their farming operations and included:

- The visibility on the market;
- Being closely involved with First Light and its strong/positive company culture;
- Being part of the vision MGB has cast for New Zealand beef;
- The benefits provided through better biosecurity management (e.g. with respect to *M bovis* management), enabled through a tightly integrated value chain;
- The MGB value chain adds value to a dairy industry by-product (bobby calf management), around which there are considerable ethical and animal welfare concerns; and
- The social connection of working alongside like-minded people, both farmers and others through the value chain.

## 2.2.3 Processing

As with other value chain participants, red meat processors also noted benefits of being involved in the MGB value chain (see orange section in Figure 1). Similar benefits to those noted by farmers were also noted by processors. These included a more direct connection with the market through MGB having the customer relationship rather than a distributor or other ‘middleman’ in the market. This direct value chain connection was seen as enabling better alignment between the design of cuts and market requirements.

It is notable that the processors in the value chain spoke of the strong relationship having developed with First Light, i.e. their role in the Programme is more than just a ‘toll processor’. Equally, by aligning with established processors, First Light enables out of specification product or other product streams (e.g. offals and other ‘fifth quarter’ products) to find routes to market without them having to develop these.

## 2.2.4 In-market partners (e.g. retail)

Benefits to the in-market partners in the value chain stem significantly from product differentiation provided through the choice and use of genetics at the start of the value chain and the management of animals on-farm. In-market partners noted the value of the distinct product characteristics and production values inherent in the product. These included:

- Wagyu genetics
- Grass-fed
- Naturally raised
- The juiciness and flavour associated with marbling
- Ethically produced/animal welfare friendly products

While the product positioning across key attributes such as breed (Wagyu), production system and raising claims, and marbling score has shifted over time, it appears that the current balance between these is ‘about right’, and has landed in a distinct and valuable niche in the market.

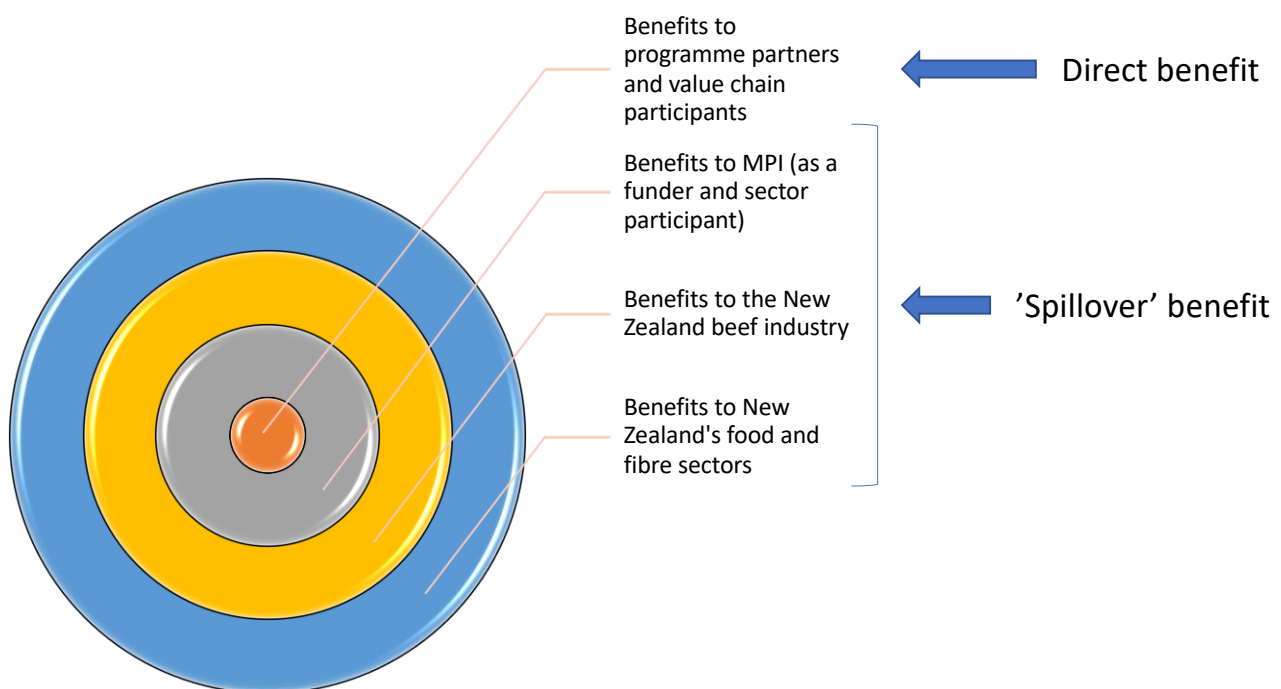
The opportunity to secure and build on customer loyalty and further explore product development were also noted as opportunities for the future.

A number of other key points were noted by in-market partners:

- Significant US retail channel growth has been enabled on the back of broader growth in the 'natural' food product category;
- The positioning of MGB product within full-service retail meat counters has enabled product to be showcased;
- Building on this full-service positioning, retail shelf-ready chilled packs have recently been launched and are performing well. These are seen as the primary vehicle for future growth; and
- In-store tasting delivered by MGB's New Zealand farmers has been valuable, creating strong connections with consumers and a strong connection to New Zealand. This also provides significant learning opportunities and connection for those farmers involved.

## 2.3 'Spillover' benefits beyond value chain partners

In addition to the direct benefits available to value chain participants, a range of other spillover benefits were also identified for the broader industry and New Zealand as shown in Figure 6.



*Figure 6: Spillover benefits to the broader industry and New Zealand*

### 2.3.1 Beef industry

It will be important for First Light to continue to evolve their business and positioning to retain a unique position in the market. However, a range of value chain participants noted that others in the beef industry are looking at both the MGB model and also the nature of the product it produces to see where additional opportunities might be available.

At a more general level, the MGB programme has provided a range of evidence of spillover benefits to the broader New Zealand beef industry. These include:

- A demonstrated model for an effective and value adding integration with the dairy sector;
- Visible evidence that a high-end beef value chain can be achieved from New Zealand;
- Demonstration of the value of close linkage with in-market partners and the co-creation of products aligned to market needs;
- Evidence that value can be added through provenance attributes related to place and production systems; and
- The benefits of tight supply linkage for biosecurity management.

### 2.3.2 New Zealand

Many of the benefits mentioned above with respect to the broader New Zealand beef sector also flow through to the broader New Zealand food and fibre sector. These include:

- The benefits of creating a strong New Zealand provenance story, the alignment of the production system with this and its communication into the market;
- The value of a relentless focus on ensuring a high quality eating experience for New Zealand products;
- The monetary and other intangible value that can be delivered through contracts with respect to price certainty;
- Demonstration of the relationship benefits of bringing in-market partners and stakeholders to New Zealand and introducing them to the farmer/grower base. This joint experience creates benefits for both farmers/growers and also for the in-market partner;
- As an exemplar of the desire/motivation of farmers/growers to be connected tightly to value chains and the power of providing market visibility for increased supplier engagement/loyalty; and
- The opportunities available to small and nimble companies such as First Light to create significant niche export markets.

The emergence of the New Zealand domestic market as an important market for MGB has provided both a financially significant market in its own right, but also created opportunities for piloting/testing of new products and approaches. This may be an approach that others in New Zealand's food and fibre sector could utilise.

### 2.3.3 MPI

In addition to the benefits identified for MGB value chain participants, and for the broader New Zealand beef and food and fibre industries, a range of benefits and learnings were also identified for MPI as both programme funder and a key stakeholder within the broader food and fibre industries. Some of these relate to the powerful demonstration potential of the MGB programme and value chain, while others relate to the opportunities for businesses provided through connection to MPI.

More specifically, key points included:

- The value of the MGB model with respect to its generation of improved bobby calf animal welfare outcomes and to the close integration of farmers and connection to specific products through to market;
- The opportunities the MGB model provides to demonstrate the potential value of niche markets and what can arise when businesses 'play on the edge', i.e. look to move into 'clear' rather than highly contested market spaces through new category or product creation; and
- The value MPI can provide through close and ongoing connection to specific businesses by providing visibility for the business on government and the opportunity to provide coordination with other government agencies and funding programs e.g. New Zealand Trade and Enterprise (NZTE).

## 2.4 Benefits delivery against expectations

**TOR: Whether MPI and the partners get what they expected when committing to invest in the Programme and if there are significant differences to the range or scale of benefits or the timing of their realisation.**

Producing and marketing high value food products has been achieved with 3,000 tonnes per annum of marbled grass-fed Wagyu beef retailing at high price points (20% higher than in-market prime USDA beef) under the FLF brand and providing a price premium of \$1.20/kg over commodity prime steer. Importer and distributor margins have been eliminated through the 'Go-Direct' model.

The animal welfare and economic diversification goals (discussed in section 2.2) have been achieved for dairy farmers by providing a prime beef channel for bobby calves. Economic diversification has also been attained for beef farmers with Wagyu, complementing prime steer and bull beef operations. However, scale and timing of benefits are not as expected. The price premium of \$1.20/kg needs to rise by 80% to reach the target premium of \$2.12/kg (see discussion in section 2.1.2). Financial sustainability from a farmer perspective is illustrated through Farmax analysis for three types of finisher systems published by FLF in April 2020. Most farmers and their consultants measure gross margins, using various methods including Farmax, with benchmarking facilitated by FLF.

The volume target for cattle processed was reduced in Year 2 of the Programme from 32,500 to 15,000 by 2019, however the actual number of 10,567 is 30% below the reduced target. By 2026, the 30,000 volume represents 58% of the 2028 target and needs to grow by 73% in the succeeding two years. Whilst the market can support this growth, a crisp value proposition for the producer group is needed to service this growth. Table 5 summarises expected/planned benefits against actual outcomes.

*Table 5: Benefits: Expected/planned benefits vs actual outcomes*

Expected/planned benefit	Actual outcomes
Producing/marketing high value food products	Marbled Grass-fed Wagyu Beef at high price points for 3 million kg
Go-Direct model	2 key markets with B2C channel, branded at retail, eliminated master distributor/importer and their associated margins
Dairy industry integration	Calf supply, animal welfare, calf premium, diversification
Sustainable NZ prime beef industry	Stable (not yet), high returning, diversification
Scale - cattle processed 2019 (15,000); 2028 (52,000)	Delayed scaling-up (2019: 10,567 or 30% behind); 58% of 2028 target by 2026

Sources: OLM (2016) and MGB Final Report (2019)

While the Outcome Logic Model (OLM) of 2016 and the Schedule 5 appendix of annual plans identified a number of expected spillover benefits for the sector and New Zealand, there has been no monitoring and reporting on these in the annual plans nor in the MGB final report.

## 2.5 Positive or negative unintended outcomes

**TOR: Identifying any significant positive or negative unintended outcomes to-date and if there any anticipated that will require monitoring in the future.**

A number of surprising outcomes were noted by value chain participants. These included:

- Positive:
  - The value of the domestic New Zealand market as both a valuable market in its own right, but also a market for piloting and testing of new products and processes
  - The powerful social drivers identified by farmers when outlining the reasons for being connected and deriving value from the MGB value chain
  - The value of the formal governance model brought by the PGP programme and the benefits of this to the broader First Light business
  - The powerful niche identified for grass-fed marbled Wagyu beef within the US and particularly the West Coast
- Negative:
  - Difficulties associated with gaining traction in some markets where it was felt there was already a good understanding of those markets

A perspective of the authors is also that it was surprising that many of the key challenges identified related to value chain coordination behind the farm gate and in the production sector, rather than being primarily focused on the market.

## 2.6 Economic benefits

**TOR: Whether the economic benefits estimated to have been realised and forecasted to be delivered (as calculated by the Programme including the economic benefits originally forecasted in the business case and subsequently updated and the 2017 independent economic benefits realised and forecast report) are based on sound assumptions using robust methodologies particularly the logic of the counterfactual scenario.**

This section assesses the economic benefits of MGB and references the 2017 MGB Economic Impact Assessment Update (see footnote 5).

### 2.6.1 Economic impacts vs benefits

Economic impacts differ from benefits. Economic impact does not consider net impact such as the counterfactual nor the wider economic benefit-cost evaluation. Economic impact assesses the potential GDP impact of MGB at the national level including investments and income. The 2017 MGB Economic Impact Assessment Update and the original 2012 Economic Impact Assessment reports assessed economic impacts and not net impact for the period 2013 to 2028.

### 2.6.2 National perspective

As PGP economic benefits need to demonstrate the return on New Zealand funds involving taxpayer and private sector funds, the cost benefit analysis needs to assess the direct economic impacts at a national level. This means that costs and benefits are assessed as if the New Zealand economy is one business entity (i.e. New Zealand Inc.). As a result, internal transfers (e.g. taxes and sales generated between New Zealand companies), as a general rule, are ignored.

The New Zealand Treasury prefers an analysis from a national perspective, termed Economic Cost Benefit Analysis or Social Cost Benefit Analysis, since the actions of one entity can impose costs or benefits on individuals or the nation as a whole<sup>7</sup>.

### 2.6.3 Counterfactual

The economic benefit of an investment project such as MGB is measured against a 'without project' counterfactual (see footnote 7). The 'without project' scenario is the status quo situation that would exist if the MGB did not go ahead. The benefits and costs with the project and without the project are estimated. Economic cost benefit analysis measures incremental benefits and costs between the 'with the project' and 'without the project' cashflows.

The 2017 MGB Economic Impact Assessment Update and the original 2012 Economic Impact Assessment reports have indirectly adopted the counterfactual in some cases, such as in benefit quantification with the use of premium pricing which is the difference between 'with project' (FLWNZ Wagyu price) and 'without the project' (Prime steer price P2).

### 2.6.4 Benefits

The benefits have to recognise internal transfers and incremental costs of production as well as the counterfactual. These include:

- i. Brownrigg Agriculture Group – the bull and semen sales are an internal transfer since it will be a cost to breeders.
- ii. Dairy farmers – the calf price premium over commodity bobby calf is an internal transfer since it will be a cost to rearers.
- iii. Firstlight Foods – the marketing fee is an internal transfer since it will be a cost to the producer group.
- iv. Producer group – as the owner of the product, this group reaps the benefits and bears all the costs. However, the price premium over the prime steer price needs to consider the incremental costs of growing and finishing Wagyu cattle relative to prime steer.
- v. New Zealand market - the portion of cattle sales to the New Zealand market is an internal transfer unless it displaced imports.
- vi. Counterfactual FLF Wagyu cattle volume - FLF Wagyu volumes that would have occurred without the PGP programme need to be deducted.
- vii. Non-FLF processors – as Wagyu cattle volumes by non-FLF processors attributed to the MGB model are highly uncertain, this needs to be omitted from the benefit calculations.

The 2017 MGB Economic Impact Assessment Update (see footnote 5) attributed 25% of total benefits to the co-investors (BA and FLF) and 15% to dairy farmers. As these are considered internal transfers, the 60% to the producer group is the portion relevant for economic benefits.

### 2.6.5 Costs

The costs have to recognise capital costs other than R&D programme expenditure and costs prior to 2016 have to be adjusted to 2016 dollars.

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<sup>7</sup> The Treasury, 2015. Guide to Social Cost Benefit Analysis, July 2015.

Apart from direct programme expenditures that were funded by MPI, the co-investors and the producer group, there may be incremental capital costs incurred by the co-investors or the producer group to deliver the MGB programme. If costs from 2013 to 2015 have been adjusted upwards using the Consumer Price Index (CPI) to 2016 dollars, the costs would be higher.

## 2.6.6 Present value

The stream of costs and benefits for the period 2013 to 2028 needs to be discounted into a present value to account for the cost of capital. The 2017 MGB Economic Impact Assessment Update calculated present value<sup>8</sup> GDP in 2016 dollars for the period 2020 to 2028<sup>9</sup>.

## 2.6.7 Net economic benefit to New Zealand

The present value figures from the 2017 MGB Economic Impact Assessment Update (see footnote 4) were adjusted to determine if MGB will deliver a positive economic benefit to New Zealand. This is a supplementary analysis to transform the 2017 MGB Economic Impact Assessment Update into a net economic benefits assessment.

Costs were doubled to address omitted costs while benefits were reduced to a fifth to eliminate internal transfers (discussed in section 2.6.4), New Zealand sales and non-FLF cattle volumes, and to account for marginal costs of Wagyu production (Table 6). The resulting net benefit is positive at \$22 million in 2016 dollars for the period 2020-2028 with a benefit-cost ratio of 2.0.

Given that the minimum acceptable benefit-cost ratio is 1.0<sup>10</sup>, this demonstrates MGB as a desirable investment for New Zealand.

*Table 6: Adjusting for increased costs and reduced benefits to derive benefit-cost ratio*

(2016 \$'million)	PV GDP	Adjustment(s)
R&D costs	21.0	Double costs
Benefit	43.0	Eliminate internal transfers leaving producer group at 60%; reduce this 60% by 2/3 to account for NZ sales at 13%, non-FLF cattle of 21% and non-consideration of marginal costs of production
Net benefit	22.0	-
Benefit to cost ratio (x)	2.0	-

*Source: Base data sourced from 2017 MGB Economic Impact Assessment Update (page iii) (footnote 5)*

<sup>8</sup> Discount rate used was 7.5%. This compares favourably with NZ Treasury discount rate of 7% for technology (or innovation) projects.

<sup>9</sup> The PV figures for the period 2013 to 2019 are not available as disclosed by 2017 MGB Economic Impact Assessment Update author, Economic Solutions Ltd. However, that period only accounts for 12.6% of total GDP increase for 2013 to 2028 (i.e. \$76m of total \$602m).

<sup>10</sup> Benefit-cost ratio of 1 means benefit equals cost or net present value of zero. NPV of zero is acceptable since the investment returned cost of capital which is the hurdle rate.

## 2.6.8 Robust economic cost benefit analysis

To conduct a robust economic cost-benefit analysis of the MGB programme, the approach requires:

- i. Status quo scenario – define the beef industry scenario had there been no MGB PGP, particularly what the producer group would be doing and FLF's Wagyu volume under the status quo.
- ii. Costs – adjust past costs to 2020 dollars, consider capital costs outside of R&D such as on-farm infrastructure, and future capital costs.
- iii. Benefits – define the profit margin of producers relative to status quo, exclude New Zealand sales as this is an internal transfer and imported foodstuffs are unlikely to have been displaced. Verify if one or more processors/marketers have copied MGB and estimate their incremental margin<sup>11</sup>.

## 2.7 Pathway and resources for future outcomes and benefits

***TOR: Determining whether the Partners have a tenable pathway and resources to achieve the projected future outcomes and benefits.***

With targets by 2025/26 to nearly triple sales volume from the current 3,100 tonnes to 8,700 tonnes and to increase the price premium over commodity beef by 80% from the current \$1.20/kg to \$2.12/kg, the pathway to success involves both marketing and production aspects of the value chain (Table 7).

### 2.7.1 Marketing pathway and resources

The marketing pathway (see footnote 6) will require expansion of sales volume, growing the price premium and risk management.

Expanding the sales volume will require delivery against the identified future targets of market expansion in current key markets, targeted through growing the US/Canada independent retail network to 390 stores from 190, expanding direct-to-consumer e-commerce channel for the MBS 6+ product line within the US, as well as establishing new markets in New Zealand, UK and China, including a steak restaurant model.

Market diversification outside of the key US market is a critical component of risk management to protect from over-reliance on one geographic market. Market expansion in the US is adequately resourced with FLF's US subsidiary building in-market capability with deployment of a General Manager - Sales and sales staff, establishing processing, cold storage and distribution networks and exploring secondary processing and logistics capability. Expanding into the China market and the e-commerce channel are in the early stages of research and feasibility testing.

Growing the price premium involves premium positioning and maximising the carcass value. Market research into human health benefits and environmental attributes of MGB will probe whether there is a premium positioning market niche opportunity. Maximising carcass value involves new product development (NPD) and 5<sup>th</sup> quarter optimisation. FLF has engaged a food technologist to lead NPD<sup>12</sup> focusing on value-added products for non-prime parts of the carcass as well as new products from the '5th quarter' such as the trim, bones and offals, to extract maximum value from the whole carcass. While growing the price premium has a sufficiently defined pathway, their contributions to achieving the \$2.12 premium needs greater clarity.

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<sup>11</sup> This can be non-quantifiable if no data or evidence.

<sup>12</sup> As well as sensory and shelf life projects.

## 2.7.2 Production pathway and resources

The achievement of objectives in the production pathway involves adequate and reliable calf supply from the dairy industry, a reliable producer group to grow and finish Wagyu cattle, coordinated planning through the 3-year production cycle, improved marbling and assured provenance. Calf supply from the dairy industry is underpinned by the robust and mutually beneficial partnership with LIC.

Growing and finishing Wagyu cattle from the current 10,500 to 30,000 heads per year will need an expanded producer group from the current 100 finishing farms to 283 farms assuming similar levels of average farm production of 122 head, and a scaled supporting network of calf rearers and backgrounders. Expanding the producer group to 283 finishing farms is feasible based on a continuation of the 19% annual growth rate in finisher numbers which has been achieved in past three years.

A lower number of finishing farms to achieve 30,000 cattle is also feasible due to 14.6% annual growth rate on average finished cattle per farm in past three year coupled with a low Wagyu calf attrition rate of up to 6% arising from mortality and loss of Wagyu cattle to the commodity prime beef supply chain. Effective relationship management to coordinate and support the producer group will be critical and resourcing is needed to improve technical support and farm extension services to align value chain incentives.

Coordinated planning to reach annual 30,000 head production with a 3-year production cycle will have to overcome issues with unplaced calves and integrating data from three IT systems. Unplaced calves refer to the one quarter of the 19,600 calves produced that have not been absorbed by the producer group due in part to calf cost affordability, and have been retained under FLWNZ ownership

MGB initiatives to address unplaced calves include expanding dairy breeder-to-finish farm numbers to grow and finish 21% of calf supply, reducing calf costs through LIC and contracting large-scale grazers as a stop-gap measure.

With respect to IT, market and production aspects of the MGB integrated farm to market value chain pass through three IT systems: 'NetSuite', 'Magic' and 'Loading Ramp'.

A supply planner has been recruited to coordinate the production chain, particularly livestock forecasting and production planning, livestock data and inventory and 'Loading Ramp' management. With a 3-year production cycle, greater integration of the IT systems is required such that the production cycle can be planned to proactively respond to demand forecasts. A well-coordinated production cycle could anticipate deficits and surpluses along the cycle that enables proactive management.

Product quality in the form of improved marbling from MBS 3.8 to 4.0 contributes to the price premium target of \$2.12/kg.

The National Beef Performance Manager leads improved marbling by reducing the proportion of lower MBS 2 and 3 cattle through production analysis and farm extension. A well-targeted genetics and production science push (discussed in section 4.2.3) with robust KPIs coupled with farm extension support for relationship managers underpins improved marbling. Given the variability amongst dairy breeders regarding selection of dams, an LIC focus on Friesian-Jersey cross dairy dams plus good rearing practices will also contribute to improved marbling.

Provenance assurance addressing regulatory, market, and environmental requirements will contribute to the premium positioning of MGB products. MGB plans to recruit a Sustainability and Quality Assurance (SQA) manager to lead the 'aspirational' QA scheme to underpin provenance claims across the producer group. This is an opportunity to consolidate the existing range of provenance attributes such as 'grass-fed', 'non-GMO', 'antibiotic-free' and 'Certified Humane', and benchmark or leverage with existing QA schemes in the primary sector.

Table 7: Current pathway and resourcing: Marketing and production

Current MGB plan	Current status and resourcing
<b>Marketing</b>	
Expand existing market: Add 200 stores to US/Canada independent retail network from 190 (2019) to 390 (2020)	FLF (USA) with processing, cold storage and distribution networks; in-market GM Sales and sales force; secondary processing and logistics capability
Market diversification options: <ul style="list-style-type: none"> <li>- B2C channels for MBS 6+ product line – US (potentially NZ, UK, China); steak restaurant model for US</li> <li>- Research China consumer market</li> </ul>	Early stages of research/feasibility
Adding more value via carcass optimisation – 5 <sup>th</sup> quarter and NPD	NPD plan, food technologist on track
Market research: health-based and environmental attributes – contribute to growing premium	Complex Lipids for Enhanced Metabolic Health research project, jointly funded by the High-Value Nutrition National Science Challenge and FLF, produced no health claim that could be promoted <sup>13</sup> . FLF continues to collaborate with beef industry stakeholders to explore the potential for health claims.
<b>Production</b>	
Calf supply: Increase from current 20,000 to 30,000	LIC partnership
Grow and finish from current 10,500 to 30,000 cattle <ul style="list-style-type: none"> <li>- Nearly triple producer group from 100 to 283 finishers</li> <li>- Complement with organic growth and low attrition considering system losses (up to 6%)</li> </ul>	Relationship managers, need to improve technical support/farm extension, incentives: value chain alignment
Production planning and IT systems <ul style="list-style-type: none"> <li>- Unplaced calves 4.6k of 19.6k</li> <li>- 3 IT systems – Magic, Loading Ramp, NetSuite</li> </ul>	Supply Planner; integrated IT system  Dairy breed to finish, large scale contract dairy grazing, affordability of calves for supply chain uptake

<sup>13</sup> But has shown that consumption of Wagyu beef is not detrimental to heart health and data is provided to in-market partners that grass-fed Wagyu beef contains higher levels of beneficial fatty acids (Omega 3) compared with grain-fed beef

Current MGB plan	Current status and resourcing
Product specifications/QA: Improved marbling to 4.0 via analysis and extension; dairy variability accepted	National Beef Performance Manager; push genetics & production science and extension, LIC focus Friesian-Jersey cross + well reared
Provenance: 'Aspirational' QA scheme for market, regulatory and environmental requirements	Sustainability and QA manager

N.B. NPD - New Product Development

## 2.8 MGB as a worthwhile investment for MPI

**TOR: Assessing if MPI's investment in the programme has been worthwhile.**

Assessed against the PGP policy objective<sup>14</sup> of sustainability and economic growth of the primary industries through private investment in innovation (Figure 7), MGB has delivered:

- A sustainable high value food business model;
- An economic benefit-cost ratio of 2; and,
- Diversification for dairy and beef farmers

Breaking down the PGP policy objective in terms of:

- **Private investment in ambitious innovation for the environment, the economy and society:**

MGB has created an innovative programme in production covering genetics, farm systems, and bobby calves and in marketing involving the generation of premiums through grass-fed, Go-Direct marketing, and a direct-to-consumer digital channel. FLF plans to continue investing in innovation in the post-PGP period.

- **Value chain approach with focus on added-value:**

MGB has connected farmers to markets and vice versa with transparency and created high value and branded retail product at niche (in the context of export markets) scale. This is a good demonstration of a working added-value model.

- **Boosting productivity, profitability and sustainability:**

MGB has produced diversification options for the dairy industry including adding value to bobby calves, a direct dairy breeder-to-finisher model through LIC, and for beef farmers when compared to commodity prime steer.

<sup>14</sup> MPI, 2016. Primary Growth Partnership programme booklet; Battell; B., 2018. Review of the Ministry for Primary Industries' Primary Growth Partnership, Phase Two: Independent review of benefits, eligibility criteria, management and implementation, May 2018.

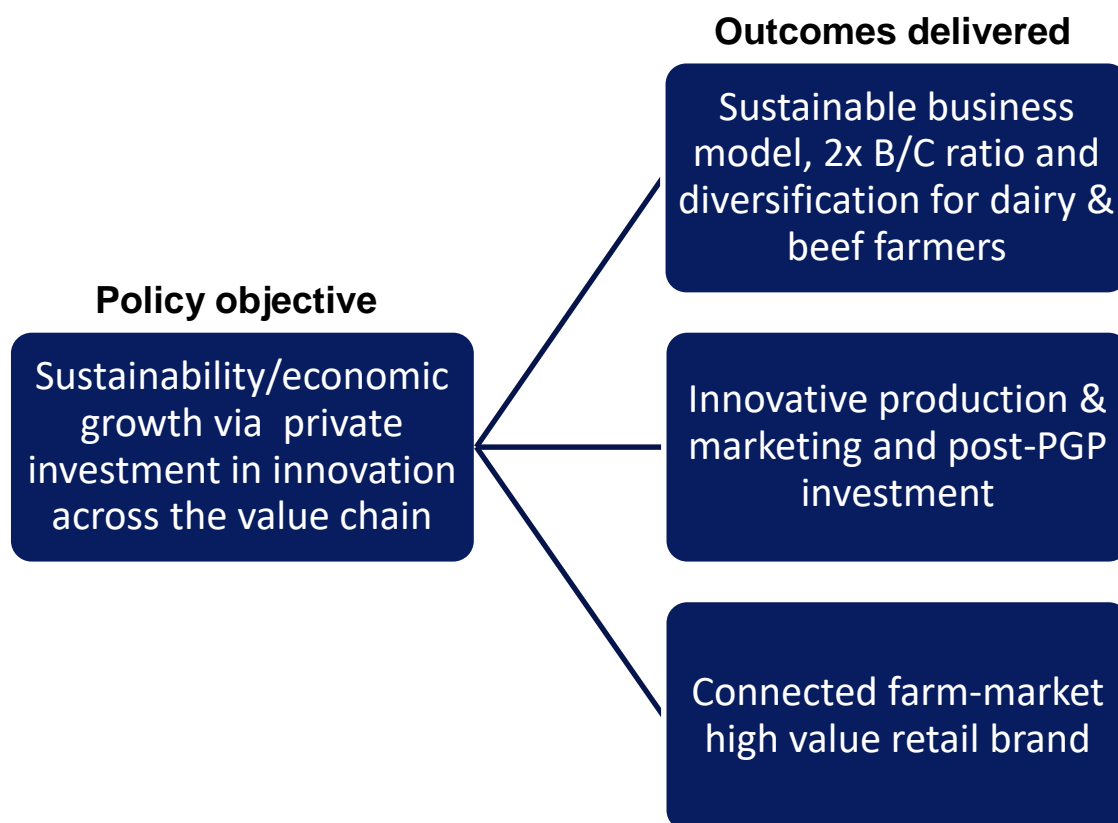


Figure 7: Outcomes delivered vs PGP policy objective

## 3 Execution

**TOR: How well was the Programme managed and governed?**

### 3.1 Addressing technical and strategic challenges

**TOR: Whether the Programme secured the governance, programme management, technical expertise and resources needed to address the technical and strategic challenges faced.**

The MGB programme is notable in that it focused on both on-farm and in-market components and innovation. As a result, technical and strategic challenges in both these areas were identified and addressed, and the underpinning resources and capabilities across technical and strategic domains were successfully utilised.

It was also evident through discussion with Programme and value chain participants that there had been a significant amount of learning identified and applied throughout the life of the Programme, i.e. an evolution of approach. Improvements in areas such as farm management, value chain integration, programme management, and governance, were all noted. Additionally, key learnings and further adaptations for the future have also been identified and are addressed in section 4.

It was notable that past evolution and achievement as well as the requirements for further change in the future were identified by Programme partners and value chain participants, and that there was good alignment and commonality on this throughout the value chain. People know what they need to do in the future, although how this occurs may not be so clear.

#### 3.1.1 Governance and programme management

The approach to governance and programme management evolved and strengthened significantly throughout the life of the Programme.

It was acknowledged that the scale and longevity provided through the PGP programme enabled “things to be done properly”, this sentiment including the value of dedicated programme management expertise and formal governance structures, including in the latter stages, an independent Chair.

It was also noted that having dedicated programme management and governance expertise alongside First Light through the PGP programme had spillover benefit to thinking and management elsewhere in the business.

### 3.1.2 Technical expertise

A broad array of technical expertise both on-farm and in-market was required for effective programme management and execution. This stretched across the value chain from genetic inputs to finished product and market and consumer insight. This breadth is a notable feature of this programme.

The Programme built a sound base through a significant scientific and technical focus on Wagyu genetics, farming and processing. This information base was well compiled into useful tools for farmers and has been a significant contributor to Programme success. Equally, the specialist skills and industry-specific focus of LIC supported both connection to, and understanding of, the dairy sector.

## 3.2 Effectiveness of the structure, systems and management

***TOR: Assessing effectiveness of the structure, systems and management in delivering and adjusting the work plan as required.***

### 3.2.1 Structure

FLF coordinates the value chain through a multi-tiered structure on-farm and a streamlined structure post-farm (see Figure 1). The key partners in genetics are BA's Wagyu Breeders Ltd producing Wagyu bulls and elite sires and LIC producing semen for artificial insemination. Genetics supply is split across dairy (80% of calf supply) and Angus breeders (20% of calf supply).

FLWNZ engaged dairy breeders and calf rearers during the early phase of MGB, however LIC has since taken over most of this role under a strategic partnership. LIC has provided scale for calf supply from the dairy industry, resulting in a 90% growth of dairy x Wagyu calves in 2017/18. Backgrounders and finishers grow and finish the 90 kg calves received from calf rearers.

There are 389 farms involved with MGB as of 2019/20 with the majority (63%) as contractors and 37% are members of the producer group (Table 8). Approximately<sup>15</sup> 65% of producers are located in the North Island and 35% in the South Island. Of this total, 100 were finishing farms that sent cattle to processors, Greenlea Meats in the North Island and ANZCO Foods in the South Island.

Producer types can span single or multiple stages of the production component of the value chain. For example, a breeder can also rear calves and/or be a finisher<sup>16</sup>.

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<sup>15</sup> Approximate since there is no farm data for LIC dairy breeders and calf rearers.

<sup>16</sup> For example, a dairy farm that has a beef growing and finishing block.

Table 8: On-farm value chain profile (2019/20)

Producer type	Number of farms	
	Producer group	Contractor
Dairy breeder and calf rearer (LIC)	0	Over 200
Dairy breeder and calf rearer (non-LIC)	18	40
Angus breeder	29	0
Backgrounder	9	1
Grazer	0	3
Finisher	89	0
Total	145	Over 244

Source: FLF

Of the 145 suppliers in the producer group, over half are shareholders (78). The number of shareholders is projected to rise to 98 by 2021, when non-shareholder suppliers have experienced a production cycle and their values are verified to match with those of FLWNZ, which are:

- “Profitable and Sustainable Returns for All,”
- “Integrity and Humility,”
- “Respect our Animals and Environment,”
- “Innovation,” and
- “Be Happy.”

Given the importance of farm type and farmer values in determining suitability for participation in the MGB model, the need to expand the producer group and the current high proportion of contractors, MGB could benefit from a well-defined producer group attribute profile in order to identify a target market of dairy and beef farmers by geographic area. Creating such a profile would facilitate a recruitment strategy to grow the producer group with aligned shareholder farmers.

The on-farm component of the value chain is supported by a GM-Wagyu and the livestock team. This is comprised of area relationship managers and recently recruited supply planner, national beef performance manager and QA manager. Farm extension technical support for improved growth rates, marbling and profitability is an aspect of production that could benefit from being strengthened (discussed in section 0).

The post-farm component of the value chain is simpler and is an area where FLF has exercised greater control. It spans processing, with two processors, and Go-Direct marketing with in-market logistics, secondary processing and retail partners.

### 3.2.2 Systems

Over the life of MGB, three IT systems have been deployed covering on-farm and post-farm components of the value chain. There is a need for better integration to project demands and to coordinate the long-cycle production time frames from mating to processing through a delicately balanced producer group structure. The three IT systems are:

- i. **Netsuite**: market/sales database (e.g. sales from FLF (NZ) and FLF (USA) to customers), FLF accounts payable/receivable.
- ii. **Magic**: supplier database (all supplier contact information including primary and secondary farming system), supply chain history for all processed cattle, payment and invoicing system for supply base (e.g. invoices for calves purchased, cattle slaughtered, pool payment), finished product sales from FLWNZ to FLF marketing (e.g. FLF (NZ), FLF (USA)) and secondary processors.
- iii. **Loading Ramp/FarmIQ**: producer data inputs, stock weights, input for supply forecasting.

While a recently recruited supply planner is using Microsoft Excel to forecast cattle numbers, a holistic system integration would provide accurate and timely data for better coordination and identify weaknesses of the systems. For example, the Magic farming system classification does not provide data on multi-role farms (e.g. breeder to finisher) or timely updating of farms that expand or reduce farming roles.

FLF has a sophisticated payment system that provides transparency from farm to market and quantifies market signals in monetary terms. The payment system enables farmer cattle-product ownership right through the market via FLF production and marketing commissions and pool payments representing distribution of FLWNZ annual operating profits to shareholder suppliers in direct relation to production stage and liveweight gain contribution.

### 3.2.3 Management

The four objectives of the MGB PGP investment (discussed in section 1.2) for the value chain cover:

- i. Genetics, led by BA - best genetics for high quality grass-fed Wagyu;
- ii. Production, led by FLF - model for year-round supply and integration with the dairy industry;
- iii. Processing and marketing, led by FLF – Go-Direct markets complemented by direct to consumer channel; and,
- iv. Production R&D, led by OFR – farming system for improved growth rates and marbling.

While the four objectives of MGB align well in supporting key aspects of the value chain, these lack KPIs including quantitative targets against baseline that illustrate their contribution to outcome achievement over the life of the Programme. For example, a milestone for Objective 1, 'best genetics for marbling in grass-fed beef' could have a breeding value index as a KPI that would link it to medium-term outcomes on price premium. The reporting of baseline data in the Schedule 5 appendix of the 2018/19 Annual Plan is either blank or shows a table of key personnel.

While growing the price premium has a sufficiently defined strategy (discussed in sections 0 and 0 plus financial policy of 12-24 month hedging of foreign exchange) and MGB has identified factors contributing to this price premium (discussed in section 2.1.2), there is no management tool to link them. Active management would enable monitoring of performance relative to targets and adjustments to the strategy. More importantly, the largest contributor to the price premium, the Wagyu base premium, which accounts for 61% of the total premium, has no defined strategy as it is beyond the control of MGB and dependent on the commodity prime steer market<sup>17</sup>.

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<sup>17</sup> The commodity prime steer market is linked to food service and competes with alternative proteins.

While premium pricing has been achieved, albeit below target, incremental costs would have been incurred in producing Wagyu beef such as higher calf and stock management costs and longer growing period. To manage the risk of adding more cost than value and ensure profitability, monitoring and benchmarking of the gross margin or earnings before interest, taxes, depreciation and amortisation (EBITDA) of Wagyu beef over commodity prime steer production using Farmax needs to continue.

### 3.3 Addressing risks, issues and changes to business environment

***TOR: assessing how well did management and governance anticipate and respond to risks, issues and external changes that impacted the Programme.***

The external business environment drivers pertain to the on-farm (production) and post-farm (marketing) sides of the value chain. The main on-farm drivers relate to producer behaviour and motivation. While bootstrapping is necessary at the onset of MGB for FLF as an entrepreneurial firm, risk management and reporting materially improved during the course of MGB.

As Wagyu beef is an alternative or supplementary revenue stream, the key external influencers are milk price for dairy farmers and commodity prime steer price for beef farmers. The barriers to adopting the MGB model include value of FLWNZ relationship and market connectedness, farm system knowhow and confidence, and profitability relative to commodity prime steer production, which in turn is influenced by price premium and marginal costs of production including calf price affordability.

MGB has cultivated a strategic relationship with LIC, coupled with breeder loyalty premiums, to scale and cement integration with the dairy industry resulting in a growing quantity and quality of calves. There is a strong values alignment between FLF and the producer group, however weak farm extension impacts farm management confidence including in the ability to consistently achieve marbling quality requirements and hence improve the farm's relative profitability.

The main post-farm driver pertains to the relative success of the Go-Direct model in different markets. The surprise strength of the domestic New Zealand market and setbacks in high value markets in the UAE, UK and EU may signal the need for identification and greater understanding of the target niche market and the suitability of the Go-Direct model to in-country market structure. While the US market is a successful Go-Direct model, it is recognised as a deep and narrow market risk that has been managed with market expansion in the US and Canada, along with a direct to consumer digital channel.

The *M. Bovis* outbreak in New Zealand is a 'black swan' event but within the purview of biosecurity risk management. The pro-active and innovative response of MGB to *M. Bovis*' risk and impact has led to minimising losses of Wagyu stock in the producer group and creation of a template for animal traceability for biosecurity risk management. This is a significant achievement.

### 3.4 Effectiveness of governance

***TOR: whether the Programme's governance was effective.***

As noted in Section 3.1.1., formal governance structures were put in place for the MGB programme and the initiation of this formal governance structure (known as a Program Steering Group – 'PSG') and its associated disciplines through the PGP programme were noted as being effective and delivering significant benefit. While the realisation of benefits through the presence of a formal governance structure grew throughout the Programme, the learnings delivered through both the presence and outcomes of the governance structure will have a lasting benefit for the businesses and participants involved.

Key benefits identified through the presence of the formal governance structure (PSG) included:

- The formal governance of the Programme provided access to valuable specialist skills and insights.
- The creation of a formal governance structure and implementation of governance processes brought valuable discipline to an entrepreneurial business, its founders and staff.

- The independent Chair of the PSG was extremely valuable, with the benefits of independence being both evident and realised.

## 3.5 Internal and external reviews

***TOR: determining if the recommendations from internal and external reviews of the Programme were considered and adopted.***

MGB has largely considered and adopted the recommendations from the one internal and one external review conducted during the Programme's life, specifically:

1. "PGP Financial Management: Assurance on MGB Partnership Use of Funding" (2015) by MPI Assurance and Evaluation under the Office of the Director General; and,
2. "Progress Review of the MGB PGP Programme (2015)" by Sapere Research Group.

A follow-up report by MPI Assurance and Evaluation in late 2015 concluded that MGB has mainly complied with its recommendations that provided assurance that MGB's financial management systems are appropriately robust and effective.

The major recommendations of the mid-term Progress Review were adopted by MGB including:

- Putting in place a suitable independent chair for PSG;
- Ensuring proper resourcing for programme management;
- Updating the economic benefits 2012 model;
- A register of stop-go decisions in the quarterly reports;
- System for supply transparency and monitoring using FarmIQ<sup>18</sup> and recruitment of supply planner; and,
- Using an absolute value of \$2.12 for price premium target rather than a relative value of 50% more than commodity prime steer.

## 4 Lessons learned

***TOR: What are the lessons from the Programme and implications for other Programmes and to SFF Futures as a whole?***

### 4.1 Key lessons

***TOR: identifying the main lessons from the findings on the execution of the Programme and delivery of the targeted outcomes and benefits?***

In undertaking the interviews for this programme, there was an overwhelming sense from value chain participants and other stakeholders that MGB has sought to innovate widely (across both on-farm and in-market components) and has generated significant success with respect to what it set out to do. The difficulties associated with respect to the breadth of innovation are not to be underestimated, and the lessons and future challenges identified here should be seen in the context of building on an already strong base.

It has been apparent throughout this review that value chain participants have derived significant value through the integrated and unified value chain model created by MGB. This has arisen for a number of reasons; strategic, financial, values-linked and social.

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<sup>18</sup> Farm IQ (internally called Loading Ramp) was selected as the mechanism to do this in 2018 after a review of Netsuite found it to be unsuitable and cost prohibitive for this purpose.

A key insight here is that financial motivators for farmers are not the only driver, or possibly even the most important driver for participation and commitment.

To this end, farmers identify benefits in being associated with a value chain community of like-minded operators. They were motivated by being involved in the production and delivery of high-quality products to known markets, and the clarity of market connection provided by MGB was a powerful motivator.

Despite this, there remain opportunities through improved communication in the provision of technical information to further build this on-farm connection. This includes increased value chain communication and visibility in both directions: connecting farmers to the market so that they understand what and how they need to produce, and also the market to farmers to demonstrate the value of the extra work undertaken by farmers within the value chain.

Enhanced communication is also required at the points of connection or the interfaces between value chain participants, with each participant knowing what they will receive and having confidence in the quality of this input. These connections are critical as everyone relies on everyone else doing a good job to ensure a high-quality product that can be delivered to the consumer.

There are opportunities to align FLF and LIC activity better with dairy industry breeders at the start of the value chain and to connect them better into the value chain and the markets for the product.

Some aspects of on-farm management also require additional research to understand them better and resolve key issues, and/or increased levels of extension and farm system management support. These include utilisation of Wagyu genetics on dairy farms for effective calf rearing through the early stages of a calf's life, as well as the nutritional and broader farm management requirements to deliver the levels of marbling sought by MGB on a consistent basis and to enable the improved returns these deliver farmers.

Financial returns do remain important, despite the attractiveness of the non-financial benefits, and must continue to be enhanced. The length of the MGB value chain and the challenges related to both high animal prices and poor cash flow were both raised by producers and should continue to be a focus for First Light as they seek to evolve their business models further and grow the supply base.

It should also be noted that participation in the MGB value chain is unlikely to suit every farmer and land class. Target farm profile is a flat to rolling land class that is on the boundary of dairy regions and farmers likely to have experience in dairy grazing. Animals must be managed differently to traditional beef operations and this requires farmer culture change. Equally however, farmers note the complementary nature of the MGB system within their overall farm business and most saw a ceiling around a third of their stock linked to MGB beef production.

## 4.2 Areas for improvement

***TOR: Outlining areas for improvement, if any, for MPI and the Partners.***

There were a range of areas identified for future focus and improvement. These are detailed below against the areas of governance and programme management.

### 4.2.1 Governance and programme management

With respect to future focus for governance and programme management, areas identified include:

- i. There would be benefit in the **PSG gaining a more 'coal face' view of the programme** and its activities to support their discussions through site visits related to programme delivery etc
- ii. There is a need to ensure **strategic alignment between all partners along the value chain** and governance can play a key role in this strategic outcome

## 4.2.2 Commercial partners

Areas for improvements for MGB commercial partners to consider include:

- i. **Greater integration of the IT systems** (NetSuite, Magic, and Loading Ramp) such that the production cycle and value chain can be planned to respond proactively to demand forecasts and where any production surplus can be anticipated and marketed with sufficient lead time. This can also enable **data analytics** where market signals can be relayed to the farm and can be packaged as a farm decision tool.
- ii. While target setting and monitoring (KPIs) got better through the programme, these require further focus and ongoing monitoring. **Creation of KPIs and associated targets for critical aspects of on-farm and post-farm outcomes** including price premium, gross margin, marbling, producer group numbers and cattle volumes. This needs to be complemented by robust **understanding of contributors to or drivers influencing these KPIs**.
- iii. **Replacement for PSG independent chair skills post-PGP** given the value-add realised during the Programme.
- iv. **Expansion of producer group proportion of suppliers** from the current 37% to be a majority of total MGB farms or total liveweight produced. This ensures an alignment of interests with the MGB model.
- v. Characterise the **producer group attribute profile** to enable the identification of a target market of dairy and beef farmers by geographic area and to facilitate a **recruitment strategy** to expand the producer group with aligned shareholder farmers.
- vi. Explore potential for **genetics partners** such as BA, LIC, OFR and dairy breeders/rearers to be **equity partners in FLWNZ** to align their interests with the MGB model rather than as external service providers.

## 4.2.3 Technical/scientific on-farm technical questions

As is the case in any business or scientific discipline, questions remain and new problems have been identified through the life of the MGB programme. It will be important to utilise available scientific, and applied farm management expertise to address these questions and issues in a way that supports the specific direction and strategies of the MGB business model. This includes through supporting engagements with a wider array of dairy and beef farmers to allow growth of the producer group.

Key technical questions to be further explored include:

- i. While it is acknowledged that this stock category fits well with other operations on-farm e.g. finishing lambs or bull beef, further work could be done to **better clarify the complementary and diversification opportunity** provided. This is true from both a dairy farmer perspective, as well as a beef farmer perspective.
- ii. How to deliver **product consistency** effectively throughout the value chain, so that participants can gain maximum benefit within their own operation. Management of the variation arising through both genetic differences and differences in on-farm livestock management for value-determining characteristics such as marbling provides significant opportunity to build both product value and farmer confidence.
- iii. There is a requirement for **further genetic information on Wagyu cattle** so that these can be most effectively utilised in the context of a dairy farm e.g. clarification of benefits for heifer calving and the management required in this context. There is a need to ensure that calves entering the MGB system get off to a good start if full value is to be extracted further down the value chain.

- iv. Further development of a **whole-farm systems approach to the management of Wagyu crossbred cattle**. It was acknowledged that these cattle require tighter management such as regular feed management and stock weighing for daily live weight gains and to enable the marbling premiums available to be secured and business benefit to flow. This requires both technical farm management adjustments and farmer behaviour change.

#### 4.2.4 MPI

Areas for improvements for MPI to consider include:

- i. The creation of opportunities within and across MPI funding programmes for the sharing of ideas, ‘tips and tricks’ with respect to the programme ‘journey’. These could include experiences related to governance, project management, research and development, farmer extension and engagement, product development etc. The focus should be on across-programme engagement.
- ii. Ensuring **fit-for-purpose MPI personnel** for engagement in programmes such as MGB, especially those with skills that can bridge private and public sector operating models including thinking and orientation.
- iii. **Consistency and capability of MPI engagement** with the programme is important – minimise investment manager/relationship manager turnover.
- iv. Periodically review that **programme management reporting** to ensure it is **lean and effective** to deliver mutual utility and benefit to MPI and commercial partners.
- v. Careful consideration of **effective ‘onboarding’** for those coming in to programme governance roles, including clarity on the roles and responsibilities of programme governance structures within MPI programmes. This would sit alongside any formal governance training provided to those taking up these roles, and is more about setting the context in which they will apply their skills and capabilities.
- vi. Actively **seeking the ‘right’ governance capability** for the programme governance structures is also important, including the required mix of skills as well as the blend of those inside and independent of the programme’s operational team of investors.
- vii. Adopt **NZ Treasury Guide for economic cost-benefit evaluation** to assess economic benefits of programmes and to ensure standardised approaches across time and programmes.

### 4.3 MPI support to maximise benefits

**TOR: Recommending how MPI can support the Partners to maximise the realisation of the financial, economic, spillover and public good benefits identified during the life of the Programme.**

Potential areas where MPI can support MGB commercial partners to maximise programme benefits include:

- i. **Facilitate emulation of high value foods model**, through other PGP/SFF Futures programmes.
- ii. **Promote cross-learning with MPI Productive and Sustainable Land Use (PSLU) package**, including interface with farm extension services and primary industry advisors.
- iii. **Support market access** e.g. protecting access to US (deep and narrow market), and address high UK and EU tariff barriers for premium beef via the prospective New Zealand-UK and New Zealand-EU Free Trade Agreements (FTAs) post-Brexit.
- iv. **Maintain close contact with commercial businesses** as PGP and similar programmes give business visibility on government and enables commercial partners to better navigate the government system e.g. NZTE support to help materialise ongoing benefits.

## 5 Summary of conclusions and recommendations

Overall, this review has shown the MGB PGP programme to be a successful and worthwhile one for all parties involved, and one that has considerable demonstration value both within the red meat sector and across the primary industry more generally.

Key ‘take home’ messages, particularly in relation to consolidating and building on the benefits achieved so far are summarised below for FLF and commercial partners:

### **Stronger farmer connection and support**

It is evident from the interviews undertaken in this analysis that those farmers involved see both monetary and ‘values-based’ benefits through their involvement in the MGB programme. There are some concerns however, and addressing these provides benefit not only to existing suppliers, but also the ability to scale operations through attracting additional suppliers of the right mindset over time. These include:

- Concerns regarding the high cost of stock purchases.
- The need for further genetic information on Wagyu and bull selection.
- The need to better support farm management practice for the delivery of the required marbling scores to monetise farmers’ management effort, through farmer extension programmes. This is important for farmer confidence in the system and product, and most farmers see a ceiling for MGB in their operation (whole-farm or beef component).
- The opportunity for on-farm management additional focus on:
  - Consistency of the animals (the ‘product’) received both across and within groups by the various supplier stages (e.g. a group of calves received by a calf rearer);
  - The use of Wagyu genetics on dairy farms needs focus with respect to management (joining and calf management); and
  - Driving the beef farming culture change that is required amongst the producer group to deliver the outcomes needed for Wagyu.

### **Amplify the power of the MGB model**

A stand-out feature of discussion with suppliers was their desire to be part of a market-linked supply chain such as that developed by MGB. This is about alignment of ‘values’ and not just economic return. Given that, there is a significant opportunity to support business development by building on this connection to the ‘why’. Key points include:

- The difference of MGB product is powerful;
- The FLF culture is powerful; and
- Market visibility is engaging.

### **Build a stronger supply chain**

Given this values alignment, there are a range of means through which supply chain connections can be strengthened for the joint benefit of all participants. Key points include:

- There is good resonance between the issues raised by FLF and supply chain participants. This is positive.
- Need to increase supply chain communications and education; including with and through LIC to the dairy sector as well as on-farm technical extension.
- Aim to streamline – breeder + calf rearer + grower/finisher; encouraging specialisation and alignment.
- Develop an integrated IT platform to facilitate planning, forecasting and supply chain management.

### **Things to think about in-market**

A number of opportunities were noted by in-market participants, including:

- Compostable packaging presentation.

- Premium retail-ready meals to utilise a wider range of cuts.
- Geographic diversification.

## **Governance**

From a First Light perspective, with the transition away from the project structures of MGB, there is an opportunity to consider how the governance benefits demonstrated through the PGP can be institutionalised in the company's mindset and structure going forward.

There were also learnings and insights provided through the review process that have benefit for MPI from the perspective of an investor and programme manager. These include:

- The need to maintain consistency of appropriate programme staff engaged in programmes and with investors.
- The need to develop effective 'on-boarding' processes for those taking up governance roles within similar projects and programmes. This includes careful consideration of the context and role of the governance group and would be applied to all those with governance roles.
- Use the learnings from this successful PGP to inform the management and design of other programmes.
- Use the New Zealand Treasury Guide for economic cost-benefit evaluation.
- Stay in contact with programme partners post-PGP to continue to learn from successes and provide a channel for these initiatives to continue to work productively with Government.

## Appendix 1: List of stakeholders consulted

Stakeholder	Name
<b>Programme staff</b>	
MPI Investment Manager	Ross McIsaac
MGB Programme Manager (current and previous)	Brigette Barrett and Matt Crowther
FLF Relationship Manager	Craig Adams
Objective 1 – Genetics (BA)	David Brownrigg
Objective 2 - Supply chain (FLF)	Gerard Hickey
Objective 3 - Marketing (FLF)	Jason Ross
Objective 4 - Production R&D (OFR)	Paul Muir
<b>Programme Steering Group/Independent Advisory Panel</b>	
PSG Chair	Juliet Maclean
PSG FLF representative	Jason Ross
PSG MPI representatives	Allan Kinsella, Ross McIsaac, Gillian Mangin (observer)
MPI Director Investments	Steve Penno
MPI Investment Advisory Panel	Harry Burkhardt
<b>External stakeholder</b>	
Sample of market partners	NZ – New World US - New Seasons Market (Oregon), Berkeley Bowl (California)
Sample of producer group	Finisher (1 NI/new, 2 SI), Breeder-Finisher (1 NI), Breeder (1 NI)
Calf supply	LIC - Heifer Production Manager Breeder – LIC 90kg breeder (1 SI) Calf rearer – contract rearer (1 SI)
Processors	Greenlea (NI), ANZCO (SI)

## Appendix 2: MGB Outcome Logic Model (2016)

Outcome Logic Model for Marbled Grass-fed Beef PGP Programme

