Foreword

On behalf of the Steering Group, I am pleased to present this final programme report on the *Transforming the Dairy Value Chain Primary Growth Partnership Programme*.

Described by a panel of international dairy experts as world-leading, this unique partnership has accelerated thinking and promoted game-changing research, innovation and input into new, higher-return dairy products, gene technology, capability-building and improved data standards and connectivity, to name a few. These advances would not have been possible without the combined effort of farmers, industry partners, scientists, researchers and government.

The partnership is on target to achieve its economic goals: by 2025 the dairy sector delivering an additional $NZD 2.7 billion in benefits to New Zealand every year. The successes don’t stop at the farm gate. Our proudest achievements have delivered educational, environmental, and social gains that benefit all New Zealanders:

- Enabling a fundamental shift in our international reputation – moving our nation from a respected global trader in bulk milk and powders to a world leader in targeted dairy products, ingredients and high-value foods, beverages and infant formula.
- Attracting and using the minds of some of this country's best and brightest to the industry, our universities and research organisations. Dozens of our top scientists and students are working on PGP-funded dairy projects that are boosting the nation’s intellectual property, while raising the reputation and excellence of New Zealand's agricultural research.
- Nurturing a pipeline of future dairy workers and leaders through education and partnerships with New Zealand Young Farmers and schools.
- Developing science and smart thinking that’s advanced our farmers' capabilities and capacity for change, driving massive improvement in management of not only nutrients and effluent, but also people, pasture, stock and environmental impacts.

You will see many more examples of the programme’s achievements in this report.

On behalf of the Steering Group, Fonterra and DairyNZ, I would like to congratulate, and offer our sincere thanks, to all those who have contributed to the success of this programme over the last seven years, and particularly the Programme Manager, Dr Andrew Fletcher. It’s one of the greatest successes of the programme – farmers, scientists, industry groups, service providers and the government working together to make a difference. Delivering jobs to grow our regional economies, high-value returns to boost the national economy, a smarter workforce and a productive, sustainable dairy sector. That’s real transformation.

Chris Kelly – Chair
Transforming the Dairy Value Chain Programme Steering Group
Executive summary

Darying is the foundation on which New Zealand’s economy, society and culture is built. No other industry or sector has made as significant a contribution to the country’s wealth and prosperity.

In 2010, the industry’s two main partners – DairyNZ and Fonterra – identified several key challenges that needed to be addressed to ensure the New Zealand dairy sector remained competitive in international markets, and delivered regional and national gains at a sustainable pace.

Challenges to be addressed included:

- Growing the global presence of the New Zealand food industry beyond the constraints of the New Zealand biosphere.
- Meeting increasing consumer demands for new products, improved management practices (e.g., animal welfare), greater quality assurance and identification.
- Responding to international developments (e.g., increasing regulation, climate change, free trade opportunities and protectionism).
- Adapting to increasing resource constraints (e.g., land area and potential restrictions on nitrogen and water use) and pressure from the New Zealand government and public for progress on meeting environmental goals.
- Fostering collaboration amongst a fragmented New Zealand research and development system with competitive tensions between research groups.

Responding to those challenges, and delivering the benefits envisaged, would require transformational change in the sector right across the dairy value chain – pre- and post-farm gate. Recognising this, in 2011, the industry, in partnership with the Ministry for Primary Industries (MPI) launched a world-leading, seven-year, $170m innovation programme through the Primary Growth Partnership (PGP) – **Transforming the Dairy Value Chain (TDVC)**. Led by DairyNZ and Fonterra, with MPI support, the programme also included other commercial partners: Synlait, LIC, New Zealand Young Farmers, Agricultural Services Limited, Landcorp Farming and ZESPRI.

The vision for the programme was to enable a transformation of the dairy sector creating increased value for New Zealand by 2025 through game-changing innovation and research in the dairy value chain that delivers economic, social and environmental benefits, and ensures New Zealand’s ongoing success as a dairy industry world leader. Through transformation of the sector, the aspirational goal of the programme was to increase benefits to New Zealand by $NZD 2.7 billion every year from 2025.

Closely aligned to the strategies of the major industry investors, DairyNZ and Fonterra, projects under the TDVC programme were broken down into five key themes of dedicated research and innovation under 13 workstreams, right along the value chain, pre- and post-farm gate.

Pre-farm gate initiatives focused on boosting on-farm productivity, while minimising dairy’s environmental footprint. Examples include new technologies, improved information sharing, enhanced advisory services and building on-farm skills and capabilities.

- **Theme 1: On-farm innovation and research:** Projects focused on developing a range of innovative technologies, opportunities and information to enable future sustainable dairy production growth, with a reduced environmental impact.
- **Theme 2: Capability and capacity:** Projects aimed at building the dairy industry’s capability, developing support networks and attracting more people to work in the sector.

Having established these foundations for sustainable milk production, research beyond the farm gate focused on human nutrition, food structures, processing and food quality management. A key aim of this work was to improve processes in manufacturing and supply, developing new product ranges for New Zealand and international markets.
• **Theme 3: Food structures**: Projects aimed at developing New Zealand as a world leader in food structure design, by working with our best and brightest university students, guided by a panel of internationally recognised leaders in food structure design. Outcomes from the university projects are then transferred in-house for further development to meet a growing consumer demand for healthier customised foods.

• **Theme 4: Quality management**: Projects aimed at creating new tools to enable efficient and sustainable dairy processing technologies that will give New Zealand a competitive advantage internationally and enable profitable growth in new dairy regions.

• **Theme 5: Nutrition and health**: Projects aimed at providing robust scientific evidence on the health benefits of dairy products including infant formula, and products to support mobility and ageing.

**Benefits delivered by the Transforming the Dairy Value Chain programme**

Through partnership, investment and cutting-edge innovation and research, the TDVC PGP programme has enabled transformational change within the New Zealand dairy sector, and as a result, the programme is on target to achieve its aspirations: delivering an additional $NZD 2.7 billion in benefits to New Zealand every year. Value includes economic, environmental and social benefits, that extend beyond farms alone, to research centres and universities, schools, firms, factory floors and further into international markets.

Over its seven-year duration, the TDVC PGP programme has delivered on its goals:
Detailed outputs from each of the 13 workstreams or “roadmaps” are outlined in the full report and include:

**The development of new products** including:

- New product launches to enable the Fonterra foodservice strategy including mozzarella cheese and UHT creams.
- New infant and follow-on formulas under the ANMUM™ brand and new infant and follow-on ingredients for sale by NZMP™.
- New formulations and a new marketing positioning for the ANLENE™ brand.
Services and capabilities now available to the dairy sector including:

- Improvements in genetic gain for the national herd and tools to screen out undesirable mutations.
- Standards and mechanisms to support the exchange of data between different organisations, reducing the burden of multiple data entry and improving overall data quality.
- Trained and certified rural professionals able to provide advice to farmers in key areas affecting the profitability and environmental performance of the farm.
- New analytical technologies that support timely milk allocation decisions.

Benefits outside the dairy sector including:

- Availability of trained and certified professionals to provide advice to farmers in other agricultural sectors.
- Wider application of data standards and data connectivity.
- New fruit management protocols for ZESPRI to support improved supply chain management resulting in better fruit quality and lower losses.

The scale and scope of the programme has also enabled world-leading science and sharing of knowledge that wouldn’t have been possible with industry players acting alone — boosting the efficiency, health and production of New Zealand farms and farmers, supporting vital environmental goals and enabling the development of exciting new dairy products. Over the coming years, the programme will continue to deliver benefits to New Zealand as those new, higher-return products become commercially viable and new scientific knowledge is applied to the sector. Already, more than $500 million has been invested to bring these new products to market.

More than 600 people have been involved in the projects under the programme, delivering more than 2,000 written outputs. More than 16 patents have been filed for new processes and products. That’s all helping to build New Zealand’s reputation as a global dairy leader, able to compete against some of the world’s largest countries and corporations. On farms, in the offices of rural professionals and companies, in our schools, research labs and universities, the PGP programme has built knowledge, capacity and capability, future-proofing the sector for generations to come.

Also, key to the programme’s success has been the relationships built between its partners – industry (DairyNZ and Fonterra and other industry partners), Ministry for Primary Industries and research providers. Through collaboration and shared investment, the programme will continue to be able to deliver game-changing research and innovation across the sector, accelerating thinking and making progress for New Zealand that might not have been possible without that combined effort.

This report provides a summary of the programme since its initiation in 2010. In addition to the key achievements and outputs, this report also covers key learnings from operation of a programme of this scale, that will be useful for programmes of a similar scale, scope and complexity in the future.

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<td>Seven-year duration</td>
<td>$NZD 163 million investment (of $NZD 170 million originally planned)</td>
<td>Projected benefits of $NZD 2.7 billion per year by 2025</td>
<td>More than $NZD 500 million of downstream investment of to commercialise outputs</td>
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<td>Approximately 2,000 written outputs</td>
<td>At least 16 patent applications (further applications are under consideration)</td>
<td>More than 600 people involved in the delivery of projects</td>
<td>Almost 60 postgraduate research degrees completed</td>
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