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Dairy for life

1 JULY 2021

‘Reasons’ Paper in Support of Fonterra’s Base Milk Price for the 2020/21 Season

PUBLIC VERSION

Glossary

2012/13 Manual Reasons Paper	Fonterra, 'Reasons' Paper in support of Fonterra's Milk Price Manual for the 2012/13 Season, 31 August 2012 http://comcom.govt.nz/regulated-industries/dairy-industry/review-of-fonterra-s-farm-gate-milk-price-and-manual/statutory-review-of-milk-price-manual/201213-season/
2012/13 Base Milk Price Report	Commerce Commission, Dairy Industry Restructuring Act 2001: Review of Fonterra's 2012/13 base milk price calculation, Final report, 16 September 2013. http://comcom.govt.nz/regulated-industries/dairy-industry/review-of-fonterra-s-farm-gate-milk-price-and-manual/statutory-review-of-milk-price-calculation-2/review-of-milk-price-calculation-201213-season/
2013/14 Base Milk Price Report	Commerce Commission, Dairy Industry Restructuring Act 2001: Review of Fonterra's 2013/14 base milk price calculation, Final report, 15 September 2014. http://comcom.govt.nz/regulated-industries/dairy-industry/review-of-fonterra-s-farm-gate-milk-price-and-manual/statutory-review-of-milk-price-calculation-2/review-of-milk-price-calculation-201314-season/
2016/17 Base Milk Price Report	Commerce Commission, Dairy Industry Restructuring Act 2001: Review of Fonterra's 2016/17 base milk price calculation, Final report, 15 September 2017. http://comcom.govt.nz/regulated-industries/dairy-industry/review-of-fonterra-s-farm-gate-milk-price-and-manual/statutory-review-of-milk-price-calculation-2/review-of-milk-price-calculation-201617-season/
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AMF	Anhydrous milkfat
BCP	Base commodity price, or FAS-equivalent commodity price.
BMP	Buttermilk powder
Codex	The Codex Alimentarius Commission, which is responsible for the development of harmonised international food standards, guidelines and codes of practice.
DIRA	Dairy Industry Restructuring Act 2001

DWU	Dairy workers union
EBIT	Earnings before interest and tax
FAS	Free alongside ship.
GDT	The GlobalDairyTrade “Events” auction platform
Farmgate Milk Price	The average price per kilogram of milk solids calculated according to the Farmgate Milk Price Manual
kgMS	Kilogram of milk solids
MPG	Milk Price Group, the independent group responsible for calculating the base milk price.
NMPB	Notional Milk Price Business, comprising the notional milk powder manufacturing business implied by Fonterra’s Farmgate Milk Price Manual.
NZD	New Zealand dollars.
NI	North Island
RCP	Reference commodity product, comprising WMP, SMP, BMP, Butter and AMF.
Reference Basket	The basket of RCPs used to calculate the Farmgate Milk Price.
Season	The period commencing on 1 June and ending on 31 May.
SI	South Island
SMP	Skim milk powder
USD	United States dollars.
WACC	Weighted average cost of capital.
WMP	Whole milk powder

1 July 2021

To: The Commerce Commission

1. Fonterra Co-operative Group Limited ("Fonterra") certifies that in terms of section 150T(b) of the Dairy Industry Restructuring Act 2001 ("Act"), Fonterra considers that the assumptions, inputs and processes described in this document and set out in the documents listed in Attachment 2 and provided to the Commission pursuant to section 150T(a) are, in all material respects, consistent with the purpose of subpart 5A of the Act.
2. This view is based on our interpretation of subpart 5A, and the other relevant assumptions, views and qualifications set out in the accompanying reasons provided pursuant to section 150T(c).

Signed by

Andrew Cordner
Director Legal

Contents

PART A

This paper provides detailed submissions in support of Fonterra's certification in respect of the 2020/21 base milk price, as required under section 150T of the Dairy Industry Restructuring Act 2001 (DIRA). Section 150T provides that Fonterra must:

- Provide the Commission with the assumptions adopted and the inputs and process used by Fonterra in calculating the base milk price for the relevant season (section 150T(a));
- Certify to the Commission the extent to which, in Fonterra's view, the assumptions adopted and the inputs and process used in calculating the base milk price are consistent with the purpose of subpart 5A of DIRA (section 150T(b)); and
- Provide the Commission with reasons for the view expressed in its certificate (section 150T(c)).

The paper is structured as follows:

- In this part (Part A), we set out our interpretation of the key legislative provisions (section 1) and provide an overview of the governance and assurance mechanisms relevant to both the base milk price and the Farmgate Milk Price calculation (section 2).
- In Part B, we set out the inputs, assumptions and processes applied in the calculation of the Farmgate Milk Price for 2020/21, and explain the reasons why, in our view, these inputs, assumptions and processes are in all material respects consistent with the purpose of subpart 5A of DIRA.

The paper has been prepared under the oversight of the Milk Price Panel, and where relevant reflects the Panel's views.

1 Our Interpretation of Key Legislative Provisions

This submission is provided in accordance with section 150T of DIRA, under which Fonterra is required to "certify … the extent to which, in [Fonterra's] view, the assumptions adopted and the inputs and process used … in calculating the proposed base milk price are consistent with the purpose of this subpart", which is located in section 150A. We set out in this section the assumptions we have made regarding the interpretation of sections 150T and 150A in preparing this submission.[1] We also comment briefly on the definition of 'base milk price'.

Section 150A

Section 150A(1) provides that "the purpose of this subpart is to promote the setting of a base milk price that provides an incentive to [Fonterra] to operate efficiently while providing for contestability in the market for the purchase of milk from farmers. Section 150A(2) further provides that the 'contestability' test is satisfied if 'any' "notional costs, revenues or other assumptions ... are practically feasible for an efficient processor."

The Commission has set out its interpretation of section 150A in a number of documents, including in its review of the 2012/13 base milk price calculation[2] and its report on its review of Fonterra's 2013/14 Milk Price Manual.[3] In brief, the Commission's view is that:

- "The primary focus of the efficiency dimension [is on] ... improving incentives for Fonterra to drive cost efficiencies."[4]
- "If the assumptions used in setting the base milk price are practically feasible, the contestability dimension is satisfied."[5]
- It is "not required to choose between the priority of the contestability and the efficiency dimensions in section 150A to assess whether the purpose is satisfied."[5]

We have previously noted that we broadly agree with the Commission's interpretation of section 150A, but that we consider dimensions of efficiency other than productive efficiency are also relevant in considering whether the base milk price appropriately incentivises Fonterra to operate efficiently. In particular, the milk price methodology is intended to create appropriate incentives for Fonterra to make efficient and innovative investment decisions. The absolute level of the milk price is relevant in this context, since a base milk price that was structurally 'too low' would incentivise inefficient investment decisions, and a base milk price that was structurally 'too high' would disincentivise efficient decisions.

The Efficiency Dimension

The Commission explains in Attachment B of the 2013/14 Manual Report that its practical approach to assessing the extent to which the base milk price incentivises Fonterra to operate efficiently is to assess:

1. The extent to which the provisions in the Manual incentivise Fonterra to operate efficiently through the use of notional components.
2. Where the provisions in the Manual require the use of actual values, to determine:
   a. whether notional data could reasonably have been used instead, and
   b. whether the use of actual data distorts or weakens incentives for Fonterra to improve efficiency.

The Commission also notes (paragraphs B23 – B24) that it considers it reasonable for Fonterra to use actual data where:

- There is insufficient information to know what an appropriate notional value would be, or
- Fonterra has very limited control over the actual costs used for the benchmark.

We address these points where relevant in our comments in this paper. In doing so, we interpret the term 'actual value' to refer to the actual value achieved by Fonterra for the relevant input in the 2020/21 season. In some cases, inputs are derived by reference to actual values achieved by Fonterra in prior years (adjusted for relevant factors such as inflation), or by reference to the actual values expected to be achieved by Fonterra in 2020/21 (e.g. budgeted amounts). We consider these inputs to be 'notional' since, consistent

[1] *Our comments in this section draw heavily on our submission dated 17 May 2013 on the Commission's Process Paper – Review of base milk price calculation, 3 May 2013 (the 'Process Paper').*
[2] *The Dairy Industry Restructuring Act 2001 – Review of Fonterra's 2012/13 base milk price calculation (the 'Calculation Report').*
[3] *The Dairy Industry Restructuring Act 2001 – Review of Fonterra's 2014/15 Milk Price Manual, 15 December 2014 (the 'Manual Report').*
[4] *2013/14 Manual Report, p.30.*
[5] *2013/14 Manual Report, p.31.*

with the Commission's framework, the use of inputs derived in this manner still incentivises Fonterra to minimise (for costs) or maximise (for revenue) the corresponding actual amounts.

The Contestability Dimension

The Commission's approach to assessing the base milk price against the contestability dimension of section 150A is also set out in Attachment B to the 2013/14 Manual Report. In brief, the Commission explains that its practical approach to assessing the extent to which the base milk price is consistent with the contestability dimension is to ask the following questions:

3. Is each individual assumption or input practically feasible for Fonterra?
4. If the assumption or input is practically feasible for Fonterra, is this due to features unique to Fonterra which do not relate to Fonterra acting efficiently? (The Commission notes that if this were the case, the relevant assumption or input may not be practically feasible for another efficient processor and it therefore undertakes a cross-check to identify whether its assessment is being affected by features unique to Fonterra which are not subject to 'safe harbour' provisions.)
5. Is there overall consistency among the assumptions used to calculate the base milk price?

Fonterra broadly agrees with this approach and reiterates the comments it made in its section 150L(e) reasons dated 31 August 2012 (at 6) to the effect that:[6]

- It is important to recognise that for each assumption or input used, there will be a range of practically feasible options.
- While the initial focus will be on individual inputs and assumptions, when it comes to the overall milk price calculated under the Manual it may be that there are a number of "unders" and "overs" that cancel each other out.

Our detailed comments in Part B focus mainly on addressing the Commission's question (1) with respect to each input and assumption used in the calculation of the base milk price. Where relevant, we also comment on whether we consider the relevant input or assumption practically feasible for other efficient processors, and on the internal consistency of the various assumptions and inputs.

Section 150T

Section 150T(b) refers to "the **proposed** base milk price" [emphasis added], whereas section 150T(a) simply refers to "the base milk price" Fonterra will not finalise its milk price for the current season until after 31 July 2020, the last day of Fonterra's financial year. Consequently, our certification and reasons, and the assumptions, inputs and processes separately provided to the Commission, are all in respect of the proposed, rather than final, base milk price for the 2020/21 season. We will provide the Commission with the inputs used in the calculation of the final base milk price for the season when the calculation has been completed, and will at that time advise the Commission of any amendments to the process or assumptions employed in the course of generating the final base milk price.

Consistent with our Reasons papers in respect of previous seasons' base milk prices, we have interpreted the key terms in the phrase "assumptions adopted, and the inputs and process used" as follows:[7]

- 'Inputs' as meaning the specific values used in calculating the base milk price for the 2020/21 year. Depending on context, these values could be expressed either as a quantum ('NZD 2.3 million'), in descriptive terms ('volume-weighted average price achieved for all WMP manufactured from NZ-sourced milk sold on GDT and shipped in the relevant month'), or both.
- 'Assumptions' as meaning the rationale underpinning the approach used to calculate each input, including the rationale for use of notional or actual values.
- 'Processes' as meaning both:
  - the approach used to (a) generate each input and (b) aggregate those inputs to produce the base milk price, and
  - the processes and controls implemented by Fonterra to ensure individual inputs and the overall milk price accurately reflect the relevant underlying data and rules.
  -

[6] *2012/13 Manual Reasons Paper.*
[7] *Fonterra's 'Reasons' Paper in support of the base milk price for the 2012/13 Season, 1 July 2013.*

Definition of Base Milk Price

The term ‘base milk price’ is defined in section 4 of DIRA as meaning “in relation to a season ... the price per kilogram of milksolids that is set by [Fonterra] for that season.” We note:

- Fonterra does not pay a uniform price for each kilogram of milk solids supplied to it in a season. Among other things, the average net price per kilogram received by suppliers will vary with relative protein and milkfat content, with supply profile across the season, with water content and with milk quality.
- Prior to the 2018/19 season, the output of the calculation methodology established by the Farmgate Milk Price Manual was the minimum aggregate amount to be paid by Fonterra (other than in exceptional circumstances) for milk supplied to Fonterra in New Zealand, and the Manual was silent on the allocation of that minimum aggregate amount across individual supply. As explained in our 2018/19 Manual Reasons Paper we now define the Farmgate Milk Price as the average amount paid by Fonterra (as calculated under the Manual) for milk supplied under Fonterra’s standard terms of supply We consider this definition of the Farmgate Milk Price as calculated under the Milk Price Manual is consistent with the definition of the ‘base milk price.’

2 Governance and Assurance Mechanisms Relevant to the Base Milk Price

As noted above, we interpret the term 'process' in section 150T to cover both the processes used by Fonterra to generate and aggregate the various inputs into the base milk price, and the processes and controls implemented by Fonterra to ensure individual inputs and the overall milk price accurately reflect the underlying data and rules. In addition, Fonterra has put in place a number of mechanisms to provide assurance that the Milk Price is consistent with the Milk Price Principles set out in both the Milk Price Manual and in Fonterra's constitution.

We set out and comment in the section on (a) the governance and assurance processes used to ensure that the individual inputs and overall milk price accurately reflect the underlying data and rules and (b) the mechanisms used to obtain assurance that the Milk Price is consistent with the Milk Price Principles.

Governance and Assurance Mechanisms

Fonterra has in place an extensive number of governance and assurance mechanisms to satisfy itself and other stakeholders in the milk price with respect to:

- The integrity of the data extracted from Fonterra's systems and used in the calculation of the base milk price.
- The integrity of the calculation methodology (for example, that the financial models used to calculate the base milk price are arithmetically correct, and that they contain the correct inputs).
- The consistency of the calculation methodology with the rules set out in the Milk Price Manual.
- The consistency of changes to the Milk Price Manual, and of the application of the Manual, to the Milk Price Principles, as set out in Fonterra's constitution and in section 2 of Part A of the Milk Price Manual.

These mechanisms comprise:

1. The **Fonterra Board**, which is accountable for the overall setting of the base milk price.
2. The **Milk Price Panel**, which Fonterra has maintained since the introduction of the current milk price mechanism in 2008, and which it is now statutorily required to maintain under s 150D of DIRA. The Panel has five members, three of whom (including the chair) are independent, as that term is defined in DIRA. Two members of the Panel are Fonterra appointed directors (one of whom is the Chair), one a farmer-elected director and two are appropriately qualified nominees of the Fonterra Co-operative Council. The current members of the Panel are Scott St John (Chair) and Bruce Hassall who are appointed Fonterra directors; Brent Goldsack who is a farmer-elected Fonterra director; and Bill Donaldson and Andrew Wallace who are nominees of the Council.

   The Panel oversees the governance of the Farmgate Milk Price and the Manual, including changes to the Manual and verification by independent external experts of key parameters (such as resource usage rates, product yields and fixed manufacturing costs). The Panel is responsible for providing recommendations to the Board on the base milk price and changes to the Manual, and assurance to the Board that the Farmgate Milk Price each year has been calculated in accordance with the Manual.
3. The **Milk Price Group**, which is responsible for:
   - Calculating the actual Farmgate Milk Price for a year, and for providing assurance to the Board with respect to forecasts of the Farmgate Milk Price.
   - Advising the Panel on the interpretation and administration of the Manual, including recommending to the Panel amendments to the Manual.
   - Appointing and overseeing the work of independent experts.
   - Determining the continued consistency of the Manual and its application with the Milk Price Principles.

   The head of the Milk Price Group is appointed by the Board, must be independent of Fonterra, and reports directly to the Chair of the Milk Price Panel. The Milk Price Group is largely resourced by EY.

4. Fonterra's external auditor, **KPMG**, which is responsible for auditing the Farmgate Milk Price each year and providing assurance that the Farmgate Milk Price has been determined in accordance with the Milk Price Manual.
5. **Fonterra's Internal Audit function**, which provides assurance over the integrity of data sourced from Fonterra's systems, including with respect to the controls maintained to ensure ongoing data integrity.
6. The **Milk Price Management Steering Committee**, which co-ordinates with the Milk Price Group to provide management input on Farmgate Milk Price matters, including on ensuring the Farmgate Milk Price calculation takes into account the full range of costs and matters impacting on the revenue of a manufacturer of commodity milk powders and their by-products. The Milk Price Management Steering Committee also oversees the internal controls environment for the business processes supporting the Milk Price.

PART B

This part sets out the reasons for the view expressed in our certificate that the assumptions, inputs and processes used to calculate the Farmgate Milk Price for the 2020/21 season are in all material respects consistent with the purpose of subpart 5A of DIRA (s 150A). The part is organised as follows:

- In section 3, we provide an overview of the calculation methodology and its components, to provide an overall context to the submissions on individual inputs contained in the subsequent sections.
- In section 4, we consider the 'safe harbour' provisions contained in s 150B of DIRA, and set out the reasons in support of our certification that Fonterra has applied the safe harbour assumptions in calculating the base milk price.
- In section 5, we set out the inputs, assumptions and processes applied in the course of calculating the revenue component of the base milk price, and provide our views on the extent to which these are consistent with s 150A of DIRA.
- In section 6, we set out the inputs, assumptions and processes applied in the course of calculating the 'cash costs' component of the base milk price, and provide our views on the extent to which these are consistent with s 150A.
- In section 7, we set out the inputs, assumptions and processes applied in the course of calculating the 'capital costs' component of the base milk price, and provide our views on the extent to which these are consistent with s 150A.
- Finally, in section 8 we comment on the internal consistency of the various inputs, assumptions and processes considered in sections 4-7, and set out the reasons why, in our view, the overall application of these inputs, assumptions and processes are in aggregate consistent with s 150A.

We have separately provided the Commission with the various financial models and data used to calculate Fonterra's estimate of the Farmgate Milk Price for the 2020/21 season as at 31 May 2021 (Fonterra's most recent full forecast). We have also separately provided to the Commission a considerable amount of material that is confidential to Fonterra in support of various statements made in this document. This material, together with the files supporting the forecast Farmgate Milk Price as at 31 May 2021, is listed in Attachment 2. Attachment 3 contains some supplementary information on the characteristics of the manufacturing plants assumed in the fixed asset base of the NMPB. Attachment 4 provides supplementary information on the approach taken to establish allowances in the Farmgate Milk Price calculation for losses of milk in the manufacturing process. Attachment 5 provides additional detail on the selection criteria used to identify the off-GDT sales included in the base milk price revenue calculation Attachment 6 sets out the results of the reviews undertaken by the Milk Price Group of the asset beta and specific risk premium, in accordance with amendments to Rules 42 and 43 of the Milk Price Manual for 2020/21.

3 Overview of the Calculation Methodology

We provide in this section an overview of the methodology used to calculate the Farmgate Milk Price, and cross-references to the sections of this document that contain detailed information on each component.

As described in the Milk Price Manual, the Farmgate Milk Price is calculated, in broad terms, as the residual amount available to pay for milk supplied to Fonterra after calculating:

1. The **revenue** that a commodity manufacturer of milk powders and their by-products would receive in respect of product manufactured from milk supplied to it in a season, under the following assumptions:
   - Total milk supply equalled Fonterra's actual supply for a season, including the actual composition (fat, protein etc.) of the milk supplied to Fonterra.
   - Milk was allocated to the manufacture of WMP and SMP, and cream to the manufacture of Butter and AMF, in proportion to Fonterra's actual allocation of milk and cream to those products, with residual buttermilk allocated to the manufacture of BMP.
   - Finished product was sold at the same time as Fonterra's sales of each product.
   - The product was sold at prices achieved by Fonterra on arm's length sales of commodity specification product.
   - The resulting USD revenue was converted to NZD at the same conversion rates as those achieved by Fonterra.

   The inputs, processes and assumptions applied in calculating the revenue assumed in the Farmgate Milk Price calculation, and our views on the consistency of each of these with section 150A of DIRA, are set out in section 5.

2. Less the **cash costs** that the commodity manufacturer described in (1) above could reasonably be expected to incur in respect of the relevant season. These costs include selling costs, collection costs, direct and indirect manufacturing costs, storage and other logistics costs, and various costs of an administrative or overhead nature.

   The inputs, processes and assumptions applied in calculating the cash costs assumed in the Farmgate Milk Price calculation, and our views on the consistency of each of these with section 150A of DIRA, are set out in section 6.

3. Less the **capital costs** that the commodity manufacturer described in (1) above could reasonably be expected to incur in respect of the relevant season. These costs including the costs associated with installing, financing and replacing the fixed assets required to manufacture the products (and volumes of those products) assumed in the revenue calculation, and the costs of financing the level of working capital implied by the timing of milk supply, production, sales and payment for milk, under the assumption that the timing of payment for milk is the same as Fonterra's.

   The inputs, processes and assumptions applied in calculating the capital costs assumed in the Farmgate Milk Price calculation, and our comments on the consistency of each of these with s 150A of DIRA, are set out in section 7.

4 Section 150B Safe Harbour Assumptions

Section 150B sets out four assumptions which, if employed in the calculation of the base milk price, "[do] not detract from the achievement of the purpose set out in section 150A." We confirm Fonterra has made each of these four assumptions in calculating the Farmgate Milk Price, and comment briefly on these assumptions, and on matters relevant to the interpretation of the statutory provisions, in this section.

Operation of National Network of Facilities for Collection and Processing of Milk

Section 150B(a) provides that the base milk price may reflect an assumption "that [Fonterra] operates a national network of facilities for the collection and processing of milk."

We assume in interpreting this provision that it is reasonable to substitute the NMPB for Fonterra, and note that the relevant assumptions in the milk price model materially reflect the relevant Fonterra data. In particular, the model assumes the same number (and location) of commodity manufacturing sites as is actually maintained by Fonterra, and that total processing capacity by site is materially aligned to Fonterra's. This assumption is reflected in the model's allowances for site overhead costs and site capital, and in various other aspects of the model, including the calculation of milk collection costs, inter-site diversion costs and inland freight costs. The model also assumes that annual volumes of milk processed on each site are materially aligned to the volumes actually processed.

Size of Assumed Units of Processing Capacity

Section 150B(b) provides that the base milk price may reflect an assumption "that the size of [Fonterra's] assumed units of processing capacity approximates to the average size of [Fonterra's] actual units of processing capacity." We have previously explained that we consider it necessary to interpret this provision in conjunction with the requirement in section 150C(1) that the base milk price be calculated by reference to returns on the subset of commodities likely to be most profitable over the period of five years from the time the portfolio of commodities is determined, from which it follows that the relevant processing capacity in this provision is Fonterra's capacity for the manufacture of the reference products.[8]

The relevant provision in the Milk Price Manual is contained in Rule 26 in Part B, which provides that the Standard Plant for each Primary Reference Commodity Product (i.e. WMP and SMP) "should have an average daily processing capacity that will result in the overall weighted average daily processing capacity of all Standard Plants for the manufacture of that Reference Commodity Product projected to be included in the Farmgate Milk Price Fixed Asset Base at the end of the subsequent Review Period being materially consistent with the overall weighted average daily processing capacity of the plants projected to be used (or able to be used) by Fonterra to manufacture the relevant Reference Commodity Product..." Rule 26 also provides that the standard plants for the manufacture of 'secondary Reference Commodity Products (i.e., BMP, Butter and AMF) "should be consistent with the capacity of plants currently available from equipment suppliers, and, where these fall in a range, erring toward the average capacity of the plants currently included in the Farmgate Milk Price Fixed Asset Base." The most recent review of the fixed asset base was completed this year, and resulted in a decision to maintain the assumed processing capacities of incremental and replacement plants for the manufacture of all five RCPs at the same levels assumed for the previous 2017-2020 Review Period.

We confirm that the average capacity assumed in the Farmgate Milk Price for the 2020/21 year is materially consistent with Fonterra's current weighted average WMP and SMP processing capacity of circa 2.2 million litres per day. The average capacity assumed for BMP, Butter and AMF plants has remained unchanged since the introduction of the Milk Price Manual in 2008, and will be maintained at these capacities (comprising 800ml per day for BMP plants and 500ml of cream per day for the Butter and AMF plants) for the next four years.

Foreign Exchange Conversion Rates

Section 150B(c) provides that the base milk price may reflect an assumption "that gains and losses experienced by [Fonterra] resulting from foreign currency fluctuations, including from [Fonterra's] risk-management strategies, are incorporated in the base milk price."

The relevant provision in the Milk Price Manual is contained in Rule 10 of Part B, which provides that:

> The process for converting USD revenue in respect of a Season to NZD shall reflect the following process:
>
> - Farmgate Milk Price USD Receipts for each month will be calculated by reference to Farmgate Milk Price US Dollar Commodity Revenue and Farmgate Milk Price Revenue Days

[8] *Fonterra's reasons paper in respect of the 2012/13 Milk Price Manual, 31 August 2012, p.2.*

- Farmgate Milk Price NZD Receipts for the month will be calculated by multiplying Farmgate Milk Price USD Receipts by the Benchmark FX Conversion Rate for the month.

The Benchmark FX Conversion Rate for a month is the average rate at which Fonterra actually converts net receipts denominated in any currency other than NZD to NZD in the month, specified as a ratio of USD to NZD and calculated with regard to all costs and benefits of Fonterra's hedging activities in respect of amounts converted in that month.

We explain in section 6 below that this process will generally result in a difference between the quantum of foreign currency gains and losses assumed over the course of a year in the calculation of the Farmgate Milk Price, compared to Fonterra's actual gains and losses over the same period. Despite these differences, our view is that the approach used to calculate the Farmgate Milk Price foreign currency conversion rate is nonetheless consistent with section 150B(c). In particular, we note that this process results in the milk price being calculated 'as if' the NMPB had applied Fonterra's foreign currency risk-management policies, but in respect of the NMPB's, rather than Fonterra's, forecast monthly USD-equivalent foreign exchange exposure, and 'as if' any inaccuracies in the NMPB's forecasts were proportionately equivalent to any inaccuracies in Fonterra's actual forecasts.

Conversion of All Milk Collected by Fonterra at Practically Feasible Yields

Section 150B(d) provides that the base milk price may reflect an assumption "that all milk collected by [Fonterra] is processed into commodities at yields that are practically feasible."

The relevant provisions in the Milk Price Manual are contained in:

- Rule 1 of Part B, which provides that the milk price calculation "will reflect all milk collected by Fonterra in New Zealand, including milk sold to third-party processors in accordance with DIRA."
- Rule 6 of Part B, which provides that milk price production volumes "will be calculated to utilise all milk supply ... given the product yields established under Rule 7."
- Rule 7 of Part B, which provides (in conjunction with the relevant definitions in Part C) that the yield assumptions must be calculated by reference to supportable assumptions with respect to product specification, including the relevant Codex requirements, and manufacturing losses.

We confirm that the Farmgate Milk Price calculation has been calculated under the assumptions that:

- All milk collected by Fonterra in New Zealand is converted into RCPs.
- The yields assumed in the conversion of milk into RCPs are practically feasible.

We further note that:

- Assurance with respect to the accuracy of the relevant inputs into the Farmgate Milk Price calculation (e.g. confirmation that milk volumes and composition assumed in the calculation reconcile to the relevant actual Fonterra data) is obtained in the course of the assurance process outlined in section 3.
- We comment further on the 'practical feasibility' of the yield assumptions in section 5.

5 Revenue

Relevant DIRA and Milk Price Manual Provisions

The Milk Price Manual rules governing the calculation of revenue inputs into the Farmgate Milk Price calculation are contained in Rules 6 – 10 of Part B, and in the various definitions included in section 1.2 of Part C of the Manual. The relevant provisions of subpart 5A of DIRA are contained in:

- Section 150C(2)(a), which provides that the portfolio of commodities used to determine the base milk price must comprise the commodities that are likely to be the most profitable over a period not exceeding 5 years from the time when the portfolio is determined.
- Section 150C(1)(a), which provides that "revenue taken into account in calculating the base milk price [must be] determined from prices of a portfolio of commodities at the times that those commodities are contracted to be sold by [Fonterra]."
- Sub-sections 150B(c) and (d), which allow for the use of Fonterra's actual foreign exchange conversion rates and for the conversion of raw milk to finished product at yields that are "practically feasible".
- Section 150C(2)(b), which further provides that relative proportions of each commodity must be determined by reference to relative profitability, Fonterra's physical manufacturing capacity, and the need to utilise all components of available raw milk. (As noted in section 4 above, we have interpreted "Fonterra's capacity" in this provision to in fact refer to the assumed capacity of the NMPB.)

Amendments to the Milk Price Manual and Material Changes in Calculation Methodology

We did not make any substantive amendments to the Milk Price Manual for 2020/21 in respect of the revenue calculation.[9] We have also not made any material changes to the calculation methodology.

Portfolio of Commodities Included in the Reference Basket

As required under section 150C(2)(a) of DIRA, we have undertaken analysis to determine whether any commodities not currently included in the Reference Basket "are likely to be" more profitable than the commodities currently included over the five year period spanning 1 June 2020 – 31 May 2025.[10] If any such commodities were to be identified, it follows that the commodities currently included do not comprise those likely to be most profitable, and that this element of the Farmgate Milk Price calculation does not comply with section 150C(2)(a).

We have separately provided the detail and conclusions of our analysis to the Commission. In summary, we have not identified any commodities not currently included in the Reference Basket that are likely to be more profitable over the relevant period than those currently included, and have therefore not adjusted the composition of the Reference Basket used to determine the 2020/21 Farmgate Milk Price.

In addition, we have extended our analysis to include the period 1 June 2021 – 31 May 2026, and have also not identified any commodities not currently included in the Reference Basket that are likely to be more profitable over that period than those currently included, and will therefore not adjust the composition of the Reference Basket used to determine the 2021/22 Farmgate Milk Price.

Overview of Revenue Calculation

The steps below provide an overview of the process used to determine total New Zealand dollar revenue in the milk price model:

Step 1: Given the volume and composition of milk supplied in each month, supportable assumptions with respect to 'yields', and Fonterra's actual allocation of milk into the four milk price product streams (WMP/Butter/BMP, WMP/AMF/BMP, SMP/Butter/BMP and SMP/AMF/BMP), determine milk price model production of each RCP in each month (Product mix and volumes).

Step 2: Map milk price model production onto assumed month of sale by reference to Fonterra's forecast sales plan. As the year progresses, 'lock down' the sales volumes for completed ('year to date') months (Sales phasings).

[9] *The definitions in Part C of the Manual of Standard Plant and Standard Product Offering, which relate to the selection of products used to inform Farmgate Milk Price revenue, were amended to address minor matters raised by the Commission. These amendments did not result in any change in the selection of products or in the quantum of the Farmgate Milk Price.*

[10] *This period has been selected on the basis that it encompasses the 2020/21 season.*

Step 3: Determine average selling prices for each RCP and for each month, reflecting prices actually achieved by Fonterra for commodity product shipped in the month and sold on current, arm's length terms (Average BCPs).

Step 4: Based on supportable assumptions with respect to sales terms, determine the quantum of notional USD cash receipted in each month, and use Fonterra's actual average USD:NZD conversion rates for the relevant month to convert the notional USD receipts to NZD (Foreign exchange conversion).

The following sections provide further detail on the assumptions adopted, and inputs and processes used, in respect of each of these steps, and our comments on the consistency of these with section 150A.

Product Mix and Volume

The table below sets out the inputs, assumptions and processes used to determine notional production volumes and product mix in the milk price model:

Inputs	Process	Assumptions
Milk supply: Fonterra's total milk supply by month (including 'winter milk' supplied in June and July) and average composition (fat, protein, lactose and minerals) by month.	Extracted from relevant Fonterra system.	Use of all Fonterra's milk supply aligns to both the Manual and to DIRA s 150B(d). Aggregation of data on a monthly basis aligns to use of monthly averages throughout the model.
Production mix: allocation of milk to SMP and WMP production, and of cream to AMF and Butter production, is aligned to Fonterra's actual allocation.	Calculated by reference to Fonterra's actual production for each month in the season. (Relevant calculation results in alignment of Fonterra's and the NMPB's ratios of WMP MT: (WMP MT + SMP MT), and of Butter MT: (Butter MT + AMF MT) for each month in the season.)	That Fonterra's product mix decisions are optimal, given information available at the time decisions are made. That use of Fonterra's actual product mix does not create any adverse incentives, and is therefore consistent with the efficiency criterion.
Production volumes (given product mix): • Fonterra's product specifications (principally the minimum ratio of protein to solids excluding fat, minimum fat, maximum moisture content) for each RCP.	Extracted from the relevant Fonterra system.	The base calculations (for both yields and costs) assume all product manufactured is 'standard' or 'base' specification product (e.g., regular WMP and medium heat SMP). The model in fact includes prices achieved on the sale of a range of commodity products (differences may be as minor as market-specific bags, or additional tests may be performed due to market-specific requirements, and the additional cost recovered from the customer). Any incremental costs for non-base specification product (including the cost of any incremental fat, protein or lactose, valued at a price consistent with the Farmgate Milk Price) relative to base specification costs are deducted as part of the revenue calculation.

Inputs	Process	Assumptions
• Provisions for milk lost in the manufacturing process.	Provisions for losses established by an external technical expert (T Gandell) having regard to results from loss audits of relevant Fonterra plants (subject to separate independent expert review by Aurecon). The loss provision covers: • Losses in milk reception, treatment and standardisation • Effluent losses • Stockfood losses • Stack losses, and • 'Overweight' losses in the course of packaging.	That these provisions reasonably reflect the average losses that would be incurred by an efficient manufacturer of RCPs from all relevant sources over the course of a full season, having regard to assumed technology and the assumption of an efficient operating model.
• Provision for actual usage of valued components in excess of minimum allowed usage ('specification offsets')	Provisions for specification offsets established by external technical expert (T Gandell) having regard to actual Fonterra performance for relevant plants and products.	That these provisions are appropriate, having regard to Fonterra data on the probability of failing relevant Codex tests and given the nature of assumed technology, including A&PC technology and capability.
• Provision for manufacture of product that is not 'fully standardised' if milk supply in a region exceeds processing capacity.	Check on a daily basis that milk supply, given composition, does not exceed assumed processing capacity in NI or SI. If supply does exceed capacity, provision for reduction of added lactose to point where all milk can be processed, with some processed into 'non-standardised' milk powder.	That non-standardised milk powder (which has higher protein content) cannot be sold for a higher price than standard composition milk powder.

We offer the following comments in support of the assumptions set out above, and with respect to (a) the practical feasibility and (b) the efficiency implications of the approach taken to establishing each input:

1. Milk supply: use of Fonterra's actual milk supply is a safe harbour assumption.
2. The production mix and volumes:
   - The product mix reflects Fonterra's allocation of milk to the manufacture of specific products at the time the milk is supplied, so it follows that this input is not 'over optimised' (and that, subject to the cross-check on available capacity, it is also practically feasible).

     This approach results in the consequences of any 'poor' decisions in respect of the allocation of milk to WMP and SMP, and cream to Butter and AMF, flowing to the milk price, and therefore it does not provide a strong incentive on Fonterra to operate efficiently with respect to its allocation of milk to the relevant product streams. The approach does not adversely affect Fonterra's incentives with respect to the allocation of milk to other, non-milk price, product streams. We have previously examined potential alternatives to using Fonterra's actual mix, and have concluded that if (say) the MPG were to establish an alternative 'benchmark' product mix rather than rely on Fonterra's allocation decisions, it would arguably be necessary for the MPG to maintain independent capability to forecast prices and monitor global demand and supply conditions, and that it is unlikely that the associated additional cost would be warranted.
   - The practical feasibility of the production losses assumed in the model is supported by the results obtained from Fonterra's detailed testing (the results of which have been separately provided to the Commission) and expert input. For the 2020/21 base milk price calculation, Fonterra has applied the

following process to update the loss assumptions relative to the assumptions employed in the calculation of the 2019/20 base milk price:[11]

- Additional detailed effluent loss data was provided from a survey undertaken by Fonterra at the Pahiatua P3 milk powder drier producing WMP in March 2020.
- Results from these surveys, and from detailed surveys undertaken in prior years, together with relevant Fonterra data from the 2019/20 and prior seasons on emissions (stack losses), stockfood and finished product packed overweight losses, were used to test and make refinements to the loss assumptions employed in the calculation of the 2018/19 base milk price. These adjustments, and recommended loss assumptions for the 2020/21 base milk price, were made by an external technical expert, Tina Gandell, engaged by the MPG, after review and input from Fonterra management. In Ms Gandell's view, the loss allowances represent "achievable, but challenging, targets for the NMPB, given the size, technology and operating parameters assumed for this business."[12] Ms Gandell explicitly considered and where appropriate adjusted the loss audit results for the impact of assumed NMPB plant operation at partial capacity (beginning and end of season) and for the identifiable impact of differences between the technology, operation and products of Fonterra plants and the NMPB.
- The results from the Pahiatua survey were included in the revised 2020/21 version of the Benchmark Event Based Loss Model, developed previously, which sets benchmarks for all identified effluent loss events in milk powder plants, the sum of which forms the overall recommended effluent loss assumptions for WMP, SMP and BMP. This resulted in some modest changes to a few of the effluent loss benchmarks.
- The loss assumptions used in the calculation of the 2020/21 base milk price imply an overall loss of [ ] of milk collected, identical to the implied overall loss given the loss assumptions employed in the 2019/20 base milk price calculation.

- Because Fonterra's actual performance with respect to yields does not directly flow through into the Farmgate Milk Price calculation, Fonterra is appropriately incentivised to minimise yield losses.

3. Specification offsets:

- The practical feasibility of the specification offsets assumed in the Farmgate Milk Price calculation is supported by detailed analysis of Fonterra's actual performance, details of which have been provided to the Commission. This is an area where Fonterra has over time invested considerable capital (which is appropriately provided for in the milk price) and built up considerable expertise, so it is possible that Fonterra achieves tighter offsets than those achieved by other processors in New Zealand. However, any advantage achieved by Fonterra does not involve the application of proprietary intellectual property, and is therefore potentially replicable by other processors.
- For the 2020/21 base milk price calculation, Fonterra has applied the following process to update the specification offset assumptions relative to the assumptions employed in the calculation of the 2017/18 base milk price:
  - The MPG engaged Tina Gandell as an external technical expert to review the specification offsets employed in the calculation of the 2018/2019 base milk price and to recommend any changes.
  - In 2014, Ms Gandell undertook a detailed review of the actual composition of base specification milk price products manufactured by Fonterra over a four-year period, including data showing the variability of performance at the plant level. Given this data Ms Gandell derived values for composition offsets that would be consistent with the composition of the product manufactured by the NMPB comfortably exceeding the relevant CODEX standard.
  - Product composition offsets should be relatively stable over time, unless there are changes in technology, plant operation and/or regulatory requirements
  - Ms Gandell has undertaken subsequent reviews to determine if these composition offset allowances remain valid, including prior to the 2020/21 season using Fonterra product composition data from seven seasons spanning 2013/14 to 2019/20.

[11] *We provide further detail on the approach taken to establishing loss allowances in Attachment 4.*
[12] *Tina Gandell, Recommendations for F21 Milk Price Manufacturing Loss Allowances (Updated) 2020-06015.*

  - Ms Gandell determined that no changes in technology, plant operation or regulations could be identified that would lead to a significant movement in product composition offsets in the Milk Price from those set in the 2014/15 Milk Price, with the exception of an apparent and consistent small decrease in SMP moisture composition over the past few seasons. On this basis, the target SMP moisture composition was decreased slightly for the 2020/21 Milk Price, with all other product compositions remaining unchanged from those established for the 2019/20 season.
  - The specification offset assumptions used in the calculation of both the 2018/19 and 2020/21 base milk prices imply an overall reduction of [ ] in volume of finished product relative to a 'nil offset' counterfactual.[13]

- Because Fonterra's actual performance with respect to yields does not directly flow through into the Farmgate Milk Price calculation, Fonterra is appropriately incentivised to minimise yield losses.

Sales Phasings

The table below sets out the inputs, assumptions and processes used to determine the volume (in metric tonnes) of each RCP assumed to be sold in each month.

Inputs	Process	Assumptions
The percentage of each RCP manufactured by Fonterra from current season milk that is sold in each month.	A 'first in, first out' (FIFO) assumption is used to determine which of Fonterra's sales of each RCP can be deemed to be of product manufactured from current season milk. As each month in the season progresses, year to date volumes deemed to have been sold by the NMPB are 'locked down', to avoid subsequent revisions to forecast milk supply, product mix or sales plans having any impact on the volume of product assumed to have already been sold.	That use of Fonterra's actual sales phasings does not create any adverse incentives. That any feasible alternative would reduce Fonterra's incentives to operate efficiently.

We offer the following comments in support of the assumptions set out above, and with respect to (a) the practical feasibility and (b) the efficiency implications of the approach taken to establishing the sales phasings inputs:

- The sales phasings reflect Fonterra's actual phasing of sales, and are therefore practically feasible. Fonterra's ability to sell its production is constrained at certain periods (particularly around the peak supply months of October and November) due to logistical constraints on shipping the volume of product manufactured by Fonterra at those times. This effective diseconomy of scale means Fonterra necessarily faces material additional storage and working capital costs that a smaller processor could choose not to be exposed to, and means Fonterra has a more restricted ability to take advantage of short-term favourable commodity prices than smaller processors. Use of Fonterra's sales phasings means these scale diseconomies are reflected in the Farmgate Milk Price calculation.
- The use of Fonterra's actual sales phasings potentially means Fonterra faces a reduced incentive to optimally phase its sales, at least of the RCPs, relative to using an independent set of phasings. In the 2013/14 base milk price report, the Commission accepted that it is appropriate for Fonterra to use actual data for sales phasing because (a) there is insufficient data to develop a reasonable notional figure, and (b) Fonterra only has limited discretion over its sales phasing.[14] The fact situation and reasoning underpinning this conclusion remains unchanged in the 2020/21 season.

Average Base Commodity Prices

The table below sets out the inputs, assumptions and processes used to determine the monthly average USD selling prices assumed in the milk price model:

[13] *In combination our loss assumptions and specification offset assumptions imply an overall reduction in volume of finished product manufactured, relative to a 'nil loss or offset' counterfactual, of 1.0%, consistent with the 2018/19 base milk price calculation.*
[14] *2013/14 Base Milk Price Report, paragraph E17, p.84.*

Inputs	Process	Assumptions
Prices Monthly average 'include series' prices, on a FAS-equivalent basis, for each RCP, separately calculated as averages for sales contracted in each of months 1-5 prior to the relevant shipment month. Include-series prices comprise: 1. Weighted average prices across all Fonterra's GDT sales of NZ-produced RCPs. 2. Weighted average prices achieved for sales of NZ-produced RCPs with similar specifications to RCPs sold on GDT, which are transacted on arm's length terms to parties independent of Fonterra, at prices that reflect prevailing market prices at the time the contract for sale is entered into, and which are made into freely contestable markets. 3. Prices for 'include' products that are not the standard specification products are adjusted for any incremental costs (relative to standard specification product) of manufacturing the product.	The relevant prices are determined using the following process: Step 1: Allocate sales recognised in a month to the month in which each sale was contracted, comprising months 1-5 prior to the month of sale. Step 2: Calculate the volume-weighted average price for the sales allocated to each of months 1 - 5 prior to the month of sale ('contract month' average prices).	That the prices used represent an unbiased estimate of the prices achievable for commodity specification product sold on current arm's length terms. That using a subset of Fonterra's actual sales appropriately incentivises Fonterra management to maximise prices achieved on other sales.
Contract month weightings Fonterra's contract profiles for sales contracted 1-5 months prior to shipment for arm's length sales satisfying the 'Volume Criteria' specified in the Part C definition of Benchmark Selling Price are used to determine weighted average shipment month prices.	Determine the percentage of sales recognised in the month that satisfy the Volume Criteria (by MT) contracted in each of months 1-5 prior to shipment month. Apply these percentages to the contract month average prices determined above, to calculate the overall weighted average prices to be applied to milk price sales of each RCP in that month.	That Fonterra's overall contract profile for arm's length commodity sales, rather than just the 'price include' contract profile, is appropriate.
Downgrade Assumptions regarding: (a) % of product assumed to fall in each of the three 'downgrade' categories (rework, stockfood and placement specifications), and (b) associated costs (relative to a counterfactual of	Established by reference to actual Fonterra performance over the period F15-F17. Established by reference to actual prior-year Fonterra costs, and	That use of a benchmark that is independent of actual current-year performance provides an appropriate performance incentive, since actual deviations from the benchmark will accrue as gains / losses to earnings. That because the benchmark is independent of current Fonterra

Inputs	Process	Assumptions
product not being downgrade), comprising discounts to 'good product' selling price for placement specifications and stockfood, and additional manufacturing costs for rework.	updated regularly. (These do not however equal current year Fonterra costs.)	performance it appropriately incentivises efficient performance.
Ocean freight recoveries Fonterra's average ocean freight cost for Milk Price products. Fonterra's average ocean freight recovery from customers for milk price products.	Deduct average ocean freight cost per MT from average on-charge to customer per MT, and multiply by total Milk Price production.	That the calculated average ocean freight recovery per MT is achievable, in addition to the FAS price, by an efficient processor of Fonterra's scale.

We offer the following comments in support of the assumptions set out above, and with respect to (a) the practical feasibility and (b) the efficiency implications of the approach taken to establishing each input:

1. Prices:
    - The prices incorporated in the calculation of the weighted average monthly BCPs used in the Farmgate Milk Price calculation reflect prices actually achieved by Fonterra on the sale of commodity product on GDT, and on the sale of commodity product with similar specifications at current market prices established on arm's length terms to customers in freely contestable global markets. In the forecast Farmgate Milk Price as at 31 May 2021, 59 per cent by volume of Fonterra's actual sales used to calculated NMPB revenue were undertaken on GDT. The remaining 41 per cent of 'price informing' sales, all of which used the most recent relevant GDT price as a key reference point, were undertaken through other sales channels. This split is consistent with the prior two years..
    - Because these prices are derived from prices achieved by Fonterra, they are practically feasible for Fonterra. We have separately provided the Commission with considerable data and analysis that demonstrates that the prices achieved by Fonterra on the sales included in the milk price calculation are not systematically higher than the prices achieved by Fonterra on sales not included,[15] and that the publicly available evidence implies they are also not systematically higher than prices achieved by other New Zealand producers.
    - In 2016/17 we extended the range of actual sales taken into account in the Farmgate Milk Price calculation. In consequence, we now exclude approximately 25 percent of sales of RCPs and all sales of non-RCPs. Also, prices achieved on GDT continue to be used as a benchmark against which sales team performance is measured with respect to off-GDT sales. Thus Fonterra continues to be appropriately incentivised to operate efficiently. (Attachment 5 provides additional detail on the selection criteria used to identify the off-GDT sales included in the base milk price revenue calculation.)
    - The Commission concluded in its 2016/17 Base Milk Price Report that "the product specifications of the off-GDT sales for the 2016/17 season are consistent with the commodity definition in the Act and standard specification products" [16] but explained that "because this position could change from year to year based on Fonterra's actual off-GDT sales, we will continue to review the off-GDT products which inform the milk price calculation in future seasons to enable us to conclude … on the consistency of the product inclusions with the Act.".[17] We confirm we have not made any amendments in 2020/21 to the product specifications used to determine which off-GDT sales are used in the milk price calculation.
2. Contract month weightings:

[15] *The sales we have continued to exclude from the calculation typically have higher 'value add' elements, comprising either physical product attributes or additional services, for which Fonterra is able to achieve higher prices, net of the associated incremental costs.*
[16] *Paragraph 2.112, p.37.*
[17] *Paragraph 2.113, p.38.*

- The contract month weightings draw on Fonterra's actual contract profile, and are therefore practically feasible.
- Use of Fonterra's overall contract profile for sales of the RCPs contracted on an arm's length basis at current prices means that Fonterra's choices between sales channels are driven solely by an assessment of which channel will deliver the highest net price, and are therefore consistent with the efficiency criterion. (The most obvious alternative approaches would likely drive inefficient decisions: use of an independently-determined set of contract month weights might incentivise Fonterra to 'manage to the model' so as to reduce earnings volatility, while use of just the GDT or 'price include' contract month weightings could result in inefficient decisions regarding the choice of sales channel and would result in unnecessary uncertainty regarding the earnings impact of specific sales that were not 'price include' sales.)

3. Downgrade:
   - The assumptions in respect of both the percentage of product falling into each downgrade category and the associated costs are derived from an assessment of Fonterra's recent historic performance, and are therefore practically feasible.
   - The assumptions do not result in the pass-through to the Farmgate Milk Price of Fonterra's actual current year performance, and are therefore consistent with the efficiency criterion.
4. Ocean freight recovery:
   - As noted above, any differences between Fonterra's actual ocean freight costs per MT[18] and the amounts charged to Fonterra's customers are included in the Farmgate Milk Price. The rationale is that in the course of comparing the price of Fonterra product to prices available from alternative sources of supply, customers will factor in differences in ocean freight rates (along with charges for any other 'add ons' in addition to the FAS price). It is therefore reasonable to assume that, on average, any margins over the cost of ocean freight will be impounded in lower FAS prices. The relevant margin reflects actual average Fonterra recoveries, and is therefore practically feasible for Fonterra.
   - Ocean freight recoveries are calculated with respect to Fonterra's average current year margins, and it might at first sight appear that this approach leaves Fonterra with a weakened incentive to minimise its negotiated rates for ocean freight. However, if Fonterra were to pay 'too much' for ocean freight, it would receive lower net prices for its non-milk price products, which would in turn result in lower earnings. We therefore do not consider the use of current year actual average margins to be inconsistent with the efficiency criterion.

Foreign Exchange Conversion

The table below sets out the inputs, assumptions and processes used to determine the monthly USD:NZD foreign exchange conversion rates used in the milk price model:

Inputs	Process	Assumptions
Fonterra's actual USD-equivalent net cash receipts in the relevant month. Fonterra's net NZD receipts, after allowing for (a) conversion from USD at spot and (b) the net proceeds of hedging contracts (forwards and other) exercised in the month.	Calculated as the ratio of Fonterra net USD-equivalent receipts for the month to (a) net NZD receipts, at spot and (b) proceeds from FX contracts exercised in the month less any costs (e.g. option premia) of those contracts. Calculated costs include the holding costs (calculated at the pre-tax milk price WACC) for the period between acquisition and exercise or expiry of options.	That application of Fonterra's average FACR for the month to the calculated Milk Price USD cash receipts in the month (which will differ from Fonterra's) is consistent with s150B(d).

The 'benchmark FX conversion rate', the average USD:NZD conversion rate applied to convert notional milk price receipts for a month, is calculated through the following steps:

[18] *In 2015/16 we revised our approach to determining Fonterra's actual ocean freight costs to consider the costs incurred by Kotahi with respect to Fonterra's freight volumes. Under this approach, differences between the relevant Kotahi costs (including a return on Kotahi's assets) and the amounts charged to Fonterra are recognised as ocean freight recoveries in the milk price calculation.*

1. Converting all Fonterra's USD-equivalent receipts to NZD at the daily average spot exchange rate for the month.
2. Adding (subtracting) to the NZD receipts the gains (losses) on foreign exchange contracts exercised by Fonterra in the month.
3. Subtracting (adding) from the NZD receipts premiums paid (received) in respect of any options for foreign exchange that are exercised or which expire in the month.
4. Subtracting (adding) from the NZD receipts a provision for interest on option premiums in respect of options exercised or expired in the month for the period elapsed since the acquisition (sale) of the option.
5. Dividing the adjusted NZD receipts obtained through steps 1 – 4 by USD receipts, to derive Fonterra's 'benchmark FX conversion rate'. The resulting series of monthly benchmark rates is then used to convert the notional net USD cash receipts of the NMPB to NZD.

This approach effectively assumes the NMPB applies Fonterra's foreign exchange hedging policy in exactly the same manner as Fonterra does, from which it follows that the assumed conversion rates are practically feasible. While use of Fonterra's average conversion rates is a safe harbour assumption, we also note that Fonterra on average converts a higher quantum than the NMPB of USD-equivalent receipts to NZD (in respect, for example, of Fonterra's offshore subsidiary operations) and is therefore appropriately incentivised to efficiently manage its foreign exchange risk management activities.

6 Cash Costs

Relevant DIRA and Milk Price Manual Provisions

The Milk Price Manual rules governing the calculation of the various cash costs assumed in the Farmgate Milk Price calculation are contained in Rules 11-23 of Part B, and in the various definitions included in section 1.3 of Part C of the Manual. The relevant provisions of subpart 5A of DIRA are contained in section 150C(1)(b), which provides that the costs taken into account in calculating the Farmgate Milk Price must include the cost of collecting milk, processing that milk into the RCPs and of selling the RCPs.

Amendments to the Milk Price Manual for 2020/21 and Material Changes in Calculation Methodology

We made several amendments to the Milk Price Manual for 2020/21 primarily relating to the processes used to calculate certain costs, which involved changes to the respective roles of independent reviewers and the Milk Price Group and to 'within-period' reviews of items normally subject to four-yearly reviews. None of these amendments had any effect on the calculation of the 2020/21 base milk price.[19] We have not made any material changes to the relevant calculation methodology.

Overview of Calculation of Cash Costs

The Farmgate Milk Price reflects appropriate provisions for the full range of manufacturing and other costs that could reasonably be expected to be incurred by a manufacturer of the RCPs. These costs are categorised in this section under the following headings:

- Selling
- Lactose
- Collection
- Packaging
- Energy
- Cost of water, cleaning and CIP, consumables, effluent and laboratory testing
- Plant labour
- Repairs and maintenance
- Site overheads
- Inland freight
- Storage
- Other supply chain costs
- Administration and other overheads
- One-off costs.

Selling Costs

The table below sets out the inputs, assumptions and processes used to determine the selling costs assumed in the calculation of the Farmgate Milk Price:

Inputs	Process	Assumptions
GDT fee schedule. NMPB sales volumes. Estimated cost of maintaining 9 in-market hubs for customer service. Estimated cost of sales-related NZ costs not provided for elsewhere in the model (including IT,	Determine the aggregate direct GDT fee that would be payable by the NMPB with respect to the proportion of its sales assumed to be undertaken on GDT. Determine by reference to corresponding Fonterra costs the costs that would be incurred by the NMPB if it maintained an offshore sales network and the associated NZ support implied by the volume of sales assumed to be	That the NMPB would be able to participate on GDT and would face an equivalent fee schedule to other third-party sellers. That the provisions for in-market resourcing and for NZ sales-related costs are appropriate given the assumptions re volumes sold

[19] *Details of these amendments are set out in our reasons paper in support of the 2020/21 Manual, dated 1 August 2020.i*

demurrage, letter of credit management and a provision for bad debts).	undertaken through channels other than GDT.	on GDT and volumes sold through the relevant off-GDT channels.

We offer the following comments in support of the assumptions set out above, and with respect to (a) the practical feasibility and (b) the efficiency implications of the approach taken to establishing each input:

- We have separately provided the Commission with the detail of the approach taken to establishing the quantum of the various items listed under the 'inputs' heading above, and consider that they include appropriate provisions for all relevant costs and that they are practically feasible.
- The assumption that the NMPB is a third-party participant on GDT means that this component of the assumed selling costs is also practically feasible for a processor other than Fonterra (and also results in a higher assumed cost than the alternative approach of assuming the actual cost to Fonterra of operating GDT).
- While various elements of the selling costs provision are derived from actual Fonterra costs, the approach does not result in Fonterra's actual current year costs flowing directly to the milk price, and is therefore consistent with the efficiency criterion.

Lactose Costs

The table below sets out the inputs, assumptions and processes used to determine the cost of added lactose assumed in the calculation of the Farmgate Milk Price:

Inputs	Process	Assumptions
1. Price: other NZ processors' average landed monthly price, ex NZ Customs[20] 2. Quantity: • yield calculations – see above • loss allowance – based on actual Fonterra data. 3. Transport Costs: • CIF costs per Customs NZ data • inland transport costs per Fonterra contracted rates • working capital days per analysis of typical contract terms, shipping days and holding days. 4. Procurement costs: • reasonable allowance calculated by reference to Fonterra actuals. 5. Storage and other holding and handling costs: • provision for storage capacity included in capital base • reasonable provisions for other costs calculated by reference to Fonterra actuals.	Step 1: Prior to the beginning of a Season, elect the use of either Fonterra's average landed lactose cost or other NZ processors' average landed lactose cost. Step 2: For each month in the season, calculate the volume-weighted average price reported to NZ Customs by whichever of Fonterra or other NZ processors was selected in Step 1, in respect of lactose landed in months 2, 3 and 4 prior to the relevant month. Step 3: Calculate the monthly CIF costs (ocean freight, insurance) as a weighted average of the supplying markets for both Fonterra and competitor imports using for each market a Fonterra freight where applicable and the competitor rate only where there is no matching Fonterra rate. Step 4: Apply to the milk price calculation the monthly series calculated under Step 2 and the corresponding CIF cost series calculated under Step 3.	That the approach appropriately incentivises efficient lactose procurement by Fonterra, since any adverse difference between Fonterra's costs and the average cost reported by other New Zealand processors falls to earnings. That the approach captures all lactose-related costs.

[20] *We advised in our Reasons Paper in respect of the 2019/20 base milk price that we had elected to use the average price reported by other New Zealand processors for 2020/21. We confirm we used this series. We also advise that we have elected to use the average price reported by other New Zealand processors in the calculation of the 2021/22 base milk price.*

We offer the following comments in support of the assumptions set out above, and with respect to (a) the practical feasibility and (b) the efficiency implications of the approach taken to establishing each input:

- The requirement under the Manual that we select prior to the beginning of a season whether Fonterra's or other processors' lactose price series will be used, and the use of actual costs for lactose landed in New Zealand, means the assumptions are practically feasible.
- Averaging over a 12-month period is in our view sufficient to capture the impact of any differences in, for example, the average lag between contracting lactose and it landing in New Zealand for Fonterra relative to other processors.
- Volume assumptions are an output of the yields calculations, and will be practically feasible so long as the yields are calculated correctly, and so long as the assumption for losses is supportable, which we consider to be the case.
- In the 2013/14 Base Milk Price Report the Commerce Commission explained why in its view the approach taken to establishing the lactose price created an incentive for Fonterra to act efficiently in procuring lactose.[21] We agree with the Commission's reasoning.

Collection Costs

The table below sets out the inputs, assumptions and processes used to determine the collection costs assumed in the calculation of the Farmgate Milk Price:

Inputs	Process	Assumptions
Fonterra's actual cash collection costs, excluding Fonterra's actual inter-factory diversion costs and inter-island milk transport costs. Modelled inter-factory diversion costs, based on calculated volumes of cream and buttermilk to be transported between sites, given asset footprint and product mix. These collection costs include Fonterra's actual diesel hedging and ETS credits costs/gains.	Diversion costs are modelled by reference to the assumed product mix (and therefore surplus cream/buttermilk) at each site, average transport cost per km, and for sites without cream or buttermilk processing capacity, the distance between the site and a designated site with cream and/or buttermilk processing capacity.	That it is not feasible to cost-effectively independently model the 'volume' drivers of Fonterra's collection costs (primarily kilometres travelled, and average kilometres travelled per hour). That the NMPB assumes sufficient processing capacity in both the North Island and South Island, and would therefore not have had to transport milk between islands in 2020/21. That Fonterra's unit costs (e.g. driver wages) are reasonably representative of the unit costs that would be incurred by an efficient processor. That differences between actual and milk price product mix (which can in practice result in milk not being delivered to the nearest site in the shoulders of the season, in circumstances where the Milk Price model would probably deliver to the nearest site) are not material.

We offer the following comments in support of the assumptions set out above, and with respect to (a) the practical feasibility and (b) the efficiency implications of the approach taken to establishing each input:

- Use of actual costs, which are incurred by Fonterra in respect of the same total volume of milk assumed to be collected by the NMPB, means the assumed costs are practically feasible for Fonterra.
- Use of actual costs also means that the approach does not provide a strong incentive for Fonterra to minimise collection costs. However, as we have previously advised, we do not consider it to be practicable to independently model the collection costs of the NMPB at a sufficiently detailed level to be able to generate a materially reasonable estimate of costs.
- We model inter-site product diversion costs on a basis that is independent of Fonterra's actual costs, which are significant, and this approach therefore appropriately incentivise Fonterra to operate efficiently in this respect.

[21] *2013/14 Base Milk Price Report, paragraphs I20 – I24 and I26, pp.102-103.*

Packaging Costs

The table below sets out the inputs, assumptions and processes used to determine the packaging costs assumed in the calculation of the Farmgate Milk Price:

Inputs	Process	Assumptions
Fonterra's actual average unit packaging costs for relevant packaging materials. Fonterra's calculated packaging usages per MT of finished product (excluding wastage). A provision derived from Fonterra's budgeted provisions for wastage of each packaging item per MT of finished product.	Modelled as fully variable, as units of usage (including wastage allowance) per MT multiplied by cost per unit, and then by MT.	That Fonterra does not have any procurement advantages not available to other industry participants of similar scale. That Fonterra's unit costs reasonably reflect the costs that would be incurred by an efficient processor. That Fonterra's budgeted wastage levels reasonably reflect the losses that would be incurred by an efficient processor.

We offer the following comments in support of the assumptions set out above, and with respect to (a) the practical feasibility and (b) the efficiency implications of the approach taken to establishing each input:

- Both the unit cost and unit usage (including wastage) assumptions are derived from Fonterra actuals, and are therefore practically feasible for Fonterra. We do not consider Fonterra has any procurement or technological advantages not available to other processors of similar scale, and therefore believe these assumptions to be practically feasible for other processors.
- Use of Fonterra's actual unit costs for packaging inputs arguably weakens the incentives on Fonterra to minimise the relevant costs, but we note that:
  a) the packaging inputs used to establish the costs assumed in the Farmgate Milk Price calculation comprise a subset of the full range of packaging inputs used by Fonterra, and Fonterra still faces appropriate incentives to minimise the cost of inputs not referenced in the Farmgate Milk Price calculation, and
  b) suppliers of packaging inputs referenced in the Farmgate Milk Price calculation generally also supply packaging inputs not used in the calculation, and we have not observed any systematic increase in the price of milk price-related inputs relative to other packaging inputs over time (as would have been observed had Fonterra not been as pro-active in minimising the cost of milk price-related inputs).

Energy Costs

The table below sets out the inputs, assumptions and processes used to determine the energy costs assumed in the calculation of the Farmgate Milk Price. In the 2017/18 Season we adopted a revised approach to calculating energy usages for milk powder manufacture, compared to prior years where we placed primary reliance on manufacturers' specified energy usages.

Inputs	Process	Assumptions
Fonterra's budgeted average unit energy costs for: • electricity • gas • coal • steam Calculated energy usage per MT of finished product drawing on: • manufacturer's specifications • results from 'energy audits' of relevant Fonterra plants • other relevant Fonterra data • expert input. Fonterra's contracted emission rate. Market price for carbon units. Gains or losses from Fonterra's energy hedging activities.	Using Fonterra's budget energy costs for energy (excluding fixed transmission, R&M, depreciation and ETS costs, but including labour) calculated average $/kwh and $/MT of steam. These rates are applied to the energy usage per MT of finished product derived from energy audits of relevant Fonterra plants. The energy audit results reflect energy use when the plant is operating at full capacity. Appropriate adjustments are made to take into account partially utilized plants in the shoulders of the season and non-production plant downtime. ETS costs are calculated using the carbon emission amount specified in Fonterra's energy provider's contracts, the amount of energy consumed by the NMPB and the average cost to Fonterra of emission units surrendered in 2020/21.	That Fonterra's energy budget is representative of actual costs and usage. That the energy consumption profile between sites within the Fonterra business is materially similar to the NMPB. That Fonterra's energy rates are representative of the rates that would be paid by an efficient processor. That manufacturers' specified energy usages, modified for relevant Fonterra data, are practically feasible for plants operating under milk price model conditions. That Fonterra's energy hedging activities do not involve the application of strategies or access to hedging products that would not be available to an efficient processor.
Fonterra's prior year actual peak energy load by site for gas and electricity and Fonterra's budget costs for electricity and gas transmission. Manufacturer's specifications for peak energy consumption. Peak milk supply for the NMPB.	Peak energy demand for the NMPB is calculated with reference to the manufacturer's specified peak energy requirements and peak milk. Peak energy requirements are applied to Fonterra's budget average peak energy cost rate to arrive at a fixed cost for gas and electricity transmission costs.	That gas and electricity transmission costs are the only material fixed energy costs. That Fonterra's budget peak energy cost rate is representative of the actual costs and rates an efficient processor would face.

We offer the following comments in support of the assumptions set out above, and with respect to (a) the practical feasibility and (b) the efficiency implications of the approach taken to establishing each input:

- The unit cost assumptions along with the provisions for transmission charges represent budgeted estimates of the average prices expected to be paid by Fonterra, adjusted for the consequences of Fonterra's energy hedging activities, and are therefore practically feasible for Fonterra. The energy usage assumptions reflect actual performance of relevant Fonterra plants, and have been subject to

expert review. We therefore consider them to be practically feasible for Fonterra. We do not consider Fonterra has any procurement advantages with respect to energy costs that are not available to other processors of similar scale, or that the plants assumed in the milk price calculation incorporate any technology relevant to energy consumption that is not available to other processors, and therefore also believe these assumptions are practically feasible for other processors.

- The approach taken to establishing unit energy cost assumptions does not result in Fonterra's actual current year prices being passed through into the Farmgate Milk Price, with any under or over-performance relative to budget going to earnings, and the energy usage assumptions are established independently of Fonterra's current year actual usage. Fonterra is therefore appropriately incentivised to minimise both its energy usage and its unit energy costs.
- In response to the Government's decision in December 2013 to restrict the use of some types of Kyoto Protocol emission units within the New Zealand emissions trading scheme from 2015 onwards, we have assumed that only New Zealand Units and New Zealand Assigned Amount Units can be surrendered to satisfy the NMPB's carbon credit obligations, and have used the average unit cost to Fonterra of units surrendered by Fonterra in 2020/21. This represents a change relative to prior years, where we used spot prices reported by OMF.

Costs of Water, Cleaning and CIP, Consumables, Effluent and Laboratory Testing

The table below sets out the inputs, assumptions and processes used to determine allowances in respect of the cost of water, cleaning and CIP, consumables, effluent and laboratory testing assumed in the calculation of the Farmgate Milk Price.

Inputs	Process	Assumptions
Fixed costs and variable unit cost of utility items sourced from Fonterra's budgeting system for: • Water • Lab testing • Cleaning • Effluent • Consumables Calculated utility usage per MT of finished product drawing on: • manufacturer's specifications • actual plant acceptance testing information of relevant Fonterra plants • other relevant Fonterra data • expert input.	Source Fonterra's budgeted fixed costs and variable unit cost for each utility item. Apply the variable unit rates to the manufacturer's specifications or actual plant acceptance testing information where available. Multiply allocated variable cost per MT by total MT of each RCP.	That the relevant variable costs materially vary with production volumes. That Fonterra's budgeted fixed utility cost is representative of actual costs and the rates an efficient processor would pay.

We offer the following comments in support of the assumptions set out above, and with respect to (a) the practical feasibility and (b) the efficiency implications of the approach taken to establishing each input:

- Because the modelled costs are not updated in the Farmgate Milk Price calculation for Fonterra's actual current year costs, this approach is consistent with the efficiency criterion.
- We have separately provided the Commission with the calculations and analysis underpinning the development of the approach to calculating these inputs. This analysis supports our view that the allowances are practically feasible.

Direct Manufacturing Wages and Employee-related Expenses

The table below sets out the inputs, assumptions and processes used to determine allowances in respect of the cost (including on-costs) of plant labour in the calculation of the Farmgate Milk Price:

Inputs	Process	Assumptions
Numbers of each type of standard plant assumed to be operational given F20 milk supply. Staffing requirements, by level, for each standard plant type. Fonterra's average DWU rate for FTEs at each level. Fonterra's average usage of temporary labour as percentage of total labour requirements. Fonterra's average 'regular' overtime %. Fonterra's average employee-related expenses, as a % of base wage/salary rates.	Calculate total wage cost for each standard plant type as FTEs at each level multiplied by average annual wage/salary rate. Add loading for employee-related expenses. Multiply through by plant numbers.	That Fonterra's labour rates are representative of the rates that would be paid by an efficient processor.

We offer the following comments in support of the assumptions set out above, and with respect to (a) the practical feasibility and (b) the efficiency implications of the approach taken to establishing each input:

- The unit cost assumption reflects Fonterra's actual average cost (given assumed staffing levels) for plant labour. Plant labour requirements were established through a process of independent review, and we have separately provided data to the Commission that demonstrates that the assumed staffing numbers materially align to the numbers actually utilised by Fonterra in plants comparable to those assumed in the Farmgate Milk Price calculation. These assumptions are therefore practically feasible for both Fonterra and for any other processor using similar manufacturing plant.
- Staffing levels are established by reference to, but independently of, Fonterra's actual staffing levels, and therefore satisfy the efficiency criterion. Unit staff costs reflect actual Fonterra costs, but the Farmgate Milk Price calculation assumes materially fewer plant labour FTEs than are actually engaged by Fonterra. Consequently, any savings in unit costs by Fonterra will result in higher earnings, and Fonterra is therefore appropriately incentivised to minimise unit plant labour costs.

Repairs and Maintenance Costs

The table below sets out the inputs, assumptions and processes used to determine allowances in respect of costs associated with the repair and maintenance of the fixed assets assumed in the calculation of the Farmgate Milk Price:

Inputs	Process	Assumptions
Fonterra's average R&M spend, excluding maintenance department labour costs, as a percentage of total replacement cost of Fonterra's fixed assets for seven manufacturing sites most similar to Milk Price model sites over the period F16-F19. Total replacement cost of milk price asset base. (In both cases excluding collection assets and dry store assets.)	Calculate Fonterra's average R&M spend, excluding maintenance department labour costs, as % of asset replacement cost to replacement cost of equivalent Milk Price assets over the period F16-F19 for seven sites most similar to milk price model sites. Apply the average ratio to the replacement cost of the relevant NMPB assets, to derive the milk price R&M provision.	That there are not material differences in average R&M spend, as a percentage of replacement cost, across (a) milk price vs. non-milk price assets on the relevant sites, and (b) across assets older than those included in the milk price asset base vs. assets with lives equivalent to those included in the milk price asset base.

Inputs	Process	Assumptions
Provision for on-site maintenance department related labour costs, established by reference to Fonterra's relevant prior year costs.	A provision for the number of FTEs required to staff onsite engineering departments, comprising trade staff, support staff and management, whose primary responsibility is the maintenance of production and utilities assets, and calculated having regard to the number of employees in each category on Fonterra sites that are broadly comparable to the sites of the NMPB.	That per FTE labour costs for the NMPB would be equivalent to Fonterra's relevant average FTE unit labour costs.

We offer the following comments in support of the assumptions set out above, and with respect to (a) the practical feasibility and (b) the efficiency implications of the approach taken to establishing each input:

- The provision for repairs and maintenance costs has been established by reference to Fonterra's actual historic costs. While Fonterra's actual costs are in respect of a different profile of assets, we have undertaken considerable analysis to determine whether there are any systematic differences in average maintenance costs, as a percentage of replacement cost, for milk price vs. non-milk price assets, and have concluded that, given Fonterra's asset maintenance policies, there is not. We therefore consider the assumed quantum of repairs and maintenance costs to be practically feasible.
- The provision for R&M is established independently of both Fonterra's actual current year R&M cost, and Fonterra's actual current year R&M spend as a percentage of the replacement cost of Fonterra's manufacturing assets, and is therefore consistent with the efficiency criterion.

Site Overhead Costs

The table below sets out the inputs, assumptions and processes used to determine allowances in respect of site overhead costs assumed in the calculation of the Farmgate Milk Price:

Inputs	Process	Assumptions
Assignment of each site to 'large', 'medium-large', 'medium' or 'small' category. FTE provisions for non-plant site labour (comprising site management, administrative staff, cleaners, maintenance of buildings and grounds, management of consumables stores). Fonterra's average direct and indirect costs for each category of labour.	Multiply FTEs in each category by relevant average direct and indirect costs.	That the staffing assumptions are appropriate given the range of activities assumed to be undertaken on each site.

We offer the following comments in support of the assumptions set out above, and with respect to (a) the practical feasibility and (b) the efficiency implications of the approach taken to establishing each input:

- The provision in respect of site overhead-related costs was established through a process of expert review, with Fonterra management input to ensure that all relevant costs were identified. The provision is in our view practically feasible, both for Fonterra and for other processors.
- Because the provision is set independently of the relevant Fonterra current year actual costs, it is consistent with the efficiency criterion.

Inland Freight Costs

The table below sets out the inputs, assumptions and processes used to determine allowances in respect of inland freight costs assumed in the calculation of the Farmgate Milk Price:

Inputs	Process	Assumptions
Modelled production volumes of each RCP at each site, established by reference to Fonterra's actual allocation of milk to sites. Fonterra's average contracted freight rate per MT of product from relevant site to relevant port.	Use calculated production of (a) dry product and (b) butter at each site to determine weighted average inland freight costs per MT for dry product and butter, respectively. Multiply total volumes of dry product and butter by weighted average freight rates to derive total inland freight cost for NMPB production. Multiply total volume of NMPB lactose NMPB by average inland freight rate per MT for dry product to derive inland freight cost for added lactose.	That Fonterra's contracted freight rates (with third-party vendors) are achievable by any processor. That the NMPB would not be able to achieve discounts relative to Fonterra rates for the back-haul advantages involved in transporting the NMPB's lactose requirements.

We offer the following comments in support of the assumptions set out above, and with respect to (a) the practical feasibility and (b) the efficiency implications of the approach taken to establishing each input:

- The average freight costs assumed in the model reflect Fonterra's actual unit costs, and are therefore practically feasible for Fonterra. Fonterra outsources its inland freight requirements to independent contractors. Since we have no cause to believe Fonterra has any procurement advantages not available to other processors, we consider these costs are also practically feasible for other processors.
- Use of Fonterra's actual inland freight rates reduces the incentive on Fonterra to minimise the relevant costs. We note, however, that the rates are independently negotiated by Coda, the management of which is appropriately incentivised to maximise returns, and that Fonterra, through its part ownership of Coda (through Kotahi), has visibility over any 'excess returns' that would arise if Coda were to 'over charge' Fonterra for inland freight.

Storage Costs

The table below sets out the inputs, assumptions and processes used to determine allowances in respect of storage costs assumed in the calculation of the Farmgate Milk Price:

Inputs	Process	Assumptions
Dry Product (WMP, SMP, BMP and AMF): Provision for capital costs. Assumed economic life of dry store assets. Storage space required per MT of each RCP. Provisions for relevant operating costs: • Labour costs per FTE. • FTE requirements per MT. • Product write-off costs, vehicle costs and miscellaneous cost	Dry store capital requirements updated annually based on budget peak production volumes and lactose storage requirements, and with cost per square metre drawn from replacement cost valuation of relevant Fonterra stores. Annual assessment to check that model incorporates sufficient dry store capacity given actual implied inventory volumes for the year, with cost of any excess of stock over space assumed to be stored with third parties at Fonterra contract rates.	That all relevant costs materially vary with MTs stored/handled. That the sample of Fonterra data used is representative of the costs an efficient processor would incur.

Inputs	Process	Assumptions
Butter: A provision for third-party cool storage costs, based on Fonterra's contracted rates, covering cost per MT per month, plus load in/load out costs.	Operating costs all modelled as being fully variable with respect to finished product MT. Labour costs per MT calculated as product of FTE cost, FTE requirement per MT, and total MT of dry product Calculate load in/load out costs based on total NMPB butter production. Calculate storage cost based on total NMPB butter production and average months in storage, calculated by reference to production and sales profile for butter.	

We offer the following comments in support of the assumptions set out above, and with respect to (a) the practical feasibility and (b) the efficiency implications of the approach taken to establishing each input:

- Dry store capital costs are based on inputs provided by independent experts, and are comparable with costs incurred by Fonterra in installing new dry stores at Darfield and Pahiatua. Operating costs, including any costs of third-party storage if required, are also established by reference to actual Fonterra costs using appropriate expert input, and are therefore practically feasible for Fonterra.
- The provision for cool store storage costs reflects actual arm's length costs incurred by Fonterra, and is therefore practically feasible, both for Fonterra and for other processors.
- Because the various storage-related provisions (other than the cool storage provision and any required third-party storage of dry product) is set independently of the relevant Fonterra current year actual costs, they are consistent with the efficiency criterion.

Other Supply Chain Costs

The table below sets out the inputs, assumptions and processes used to determine allowances in respect of other supply chain costs assumed in the calculation of the Farmgate Milk Price:

Inputs	Process	Assumptions
Comprise specific fixed provisions for: Global supply chain management Global market access costs Documentation and customer services costs	Reset at four-year review, and based on analysis of relevant Fonterra costs, with PPI indexation in other years.	That the process results in all relevant costs being accounted for, and that the four-yearly reset appropriately incentivises Fonterra to operate efficiently.

We offer the following comments in support of the assumptions set out above, and with respect to (a) the practical feasibility and (b) the efficiency implications of the approach taken to establishing each input:

- These provisions were all established through a process of expert review, with input from Fonterra management to ensure all relevant costs were identified. The provisions are in our view practically feasible, both for Fonterra and for other processors.
- Because the provisions are set independently of the relevant Fonterra current year actual costs, they are consistent with the efficiency criterion.

Administration and Other Overhead Costs

The Farmgate Milk Price calculation contains provisions for the costs of the wide range of activities of an administrative or overhead nature that would be undertaken by a commodity milk powder manufacturer with the scale of the NMPB.

Inputs	Process	Assumptions
Provisions in respect of the costs of the various administrative and overhead functions of a large-scale commodity processor, covering the range of activities identified in Attachment 1.	Established through an extensive 'review year' process, by reference to Fonterra's actual costs, and involving a review of all overhead costs incurred by Fonterra in New Zealand to determine the costs that would be relevant to a processor with the characteristics of the NMPB.	That the 'bottom up' process used to determine which of Fonterra's costs would be likely to be incurred by the NMPB means there is little possibility that any relevant category of costs would be omitted. That establishing the NMPB's costs by reference to Fonterra's actual costs does not result in a material overstatement of the relevant costs.

We offer the following comments in support of the assumptions set out above, and with respect to (a) the practical feasibility and (b) the efficiency implications of the approach taken to establishing each input:

- As noted in Attachment 1, provisions have been included in this category for costs that are actually incurred by Fonterra, and which may be incurred by a commodity-only processor of Fonterra's scale, but which we anticipate would not be incurred by smaller processors. (Costs falling into this category include expenditure by Fonterra of an industry good nature, such as providing policy input into the formulation of environmental and trade policy.)
- These provisions were all established through a process of expert review, with extensive Fonterra management input to ensure that all relevant costs were identified. A new review was undertaken in 2019, with the outcomes from that review implemented in full in the 2019/2020 season. The review identified (a) that some costs had increased by more than inflation since the previous review in 2016, and (b`) additional costs arising from some new and expanded activities relating to changes in the external environment.

The provisions are therefore in our view practically feasible, both for Fonterra and for other processors, and, because they are set independently of the relevant Fonterra current year actual costs, they are consistent with the efficiency criterion.

One-off Costs

Under Rule 19, the Manual provides for costs of a non-recurring nature which could reasonably be expected to be incurred by the NMPB, but which are not specifically provided for elsewhere in the Manual. This rule provides for the inclusion of allowances for:

- Costs that arise where Fonterra has a contractual obligation to pay for milk but is unable to collect it due, for example, to a significant snow storm. These costs are covered by excluding this milk from our calculation of milk price model revenue and variable costs, but including it when calculating the average milk price. This approach results in the 'cost' of an uncollectable kilogram of milk solids being calculated as the foregone earnings of the NMPB, rather than Fonterra's actual foregone earnings from not being able to process the milk.
- Costs incurred by Fonterra due to one-off events that cannot be forecast, such as the Christchurch earthquake or the Maui gas pipeline failure, and which are not covered, whether in part or in full, by Fonterra's (or the NMPB's) insurance policies. Our approach to these costs is to assess the nature and extent of the costs the NMPB would have faced as a consequence of the particular event, and to deduct this amount when calculating the base milk price. Depending on the circumstances, the cost provided for in the base milk price may be less than, the same as, or more than the actual cost incurred by Fonterra.

The 2020/21 base milk price includes allowances for two categories of one-off costs, relating to:

- Financial impacts arising from COVID-19 which are relevant to the base milk price calculation.
- We explained in the 2019/20 Base Milk Price Reasons Paper that, like many other New Zealand employers, Fonterra was currently evaluating the implications of the recent Employment Court decision in the case of Metropolitan Glass and Glazing (Metroglass), relating to the holiday pay treatment of incentive payments, and that at the date of our Reasons Paper we were still considering whether it was necessary to adjust our labour costs in light of this decision.[22] We subsequently included an allowance in the final 2019/20 Farmgate Milk Price, and advise that we have included an updated allowance in the 2020/21 base milk price.

[22] *Metropolitan Glass & Glazing Limited v Labour Inspector, Ministry of Business and Innovation and Employment [2020] NZEmpC 39.*

7 Capital Costs

Relevant DIRA and Milk Price Manual Provisions

The Milk Price Manual rules governing the calculation of the various capital costs assumed in the Farmgate Milk Price calculation are contained in Rules 24-43 of Part B, and in the various definitions included in section 1.4 of Part C of the Manual. The relevant provisions of subpart 5A of DIRA are contained in:

- Section 150C(1)(b), which provides that the costs taken into account in calculating the base milk price must include the capital costs, including a return on capital, of collecting milk, processing that milk into the RCPs and of selling the RCPs.
- Sub-sections 150B(a) and (b), which provide for the assumptions that the NMPB may reflect Fonterra's national site footprint and the average processing capacity of Fonterra's plants for the manufacture of the RCPs.

Amendments to the Milk Price Manual for 2020/21 and Material Changes in Calculation Methodology

The amendments to the Milk Price Manual approach to 'within-period reviews (Rule 19) discussed above, which allows the result of a review to be implemented, where necessary, in the year of the review applies to capital as well as cash costs, as do the amendments providing that the Milk Price Group will now be responsible for reviews previously assigned in the Manual to 'independent reviewers'. We also amended Rule 42 (Asset beta) to provide that the MPG must have regard to the asset-beta related amendments to s 150C of DIRA when formulating its asset beta recommendation. We have also not made any material changes to the relevant calculation methodology, other than those relating to the calculation of the asset beta, as described in Attachment 6.

Overview of Calculation of Capital Costs

The steps below provide an overview of the process used to determine the cash costs assumed in the calculation of the Farmgate Milk Price:

Step 1: Determine the fixed assets required to collect the milk supplied to the NMPB, and to manufacture and store the RCPs manufactured by the NMPB.

Step 2: Determine an appropriate value for the cost of capital.

Step 3: Determine an appropriate approach for spreading capital recoveries in respect of the fixed assets of the NMPB over time, and for otherwise fully recovering relevant capital costs.

Step 4: Determine an appropriate allowance for the company tax that would be paid by the NMPB.

Step 5: Determine an appropriate allowance for financing costs in respect of the net working capital balances implied by the NMPB's collection and sales profiles, and by other assumptions relevant to an assessment of the NPMB's net working capital requirements.

The following sections provide further detail on the assumptions adopted, and inputs and processes used, in respect of each of these steps, and our comments on the consistency of these with section 150A.

Fixed Assets

We have separately provided in Attachment 3 additional information on the fixed assets assumed in the calculation of the base milk price.

The table below sets out the inputs, assumptions and processes used to determine the fixed assets required by the NMPB, and assumed in the calculation of the Farmgate Milk Price:

Inputs	Process	Assumptions
Manufacturers' 2008 quotations for construction of WMP and SMP plants. Manufacturers' 2011, 2015 and 2019 quotations for construction of WMP, SMP, BMP, Butter and AMF plants. Detail of actual construction costs for Darfield site. DTZ assessment of: • economic lives and replacement cost valuations of (a) relevant Fonterra assets (comprising butter, AMF and BMP plants, ancillary site services and site infrastructure assets • additional costs relevant to assessment of full replacement costs (consents, capitalised interest etc) • Jones Lang LaSalle (JLL) assessment of inflation in replacement costs subsequent to 2008. JLL analysis of current dry store construction costs across New Zealand in 2014. Book values at 1 August 2020 of Fonterra's milk collection fixed assets.	Determine incremental plant requirements on a forward-looking basis, having regard to forecast changes in milk supply in the North Island and South Island, respectively. Assessment is aligned to Fonterra's formal annual refresh of its long run milk supply forecasts, with decisions re addition of plants made irrevocably approximately 18 months prior to commencement of season in which plant is assumed to be first available for use. Assume full replacement of each major plant component at the end of the component's economic life, subject to the capacity being required given our medium term forecast of milk supply. 'Spreading back' over time of initial asset base, with effect (for example) that 1/30th of assets with an assumed economic life of 30 years were assumed to have been acquired in each of the previous 30 years. Annual assessment of incremental dry storage requirements, given forecast inventory volumes for following year.	That approach to determining incremental capacity requirements maintains alignment between milk price asset base and approach to setting relevant cost inputs, including collection costs. That economic life (and implied replacement cost) assumptions are reasonable, including with respect to historic and assumed future rate of technological change. That there is no material difference between the Fonterra's actual milk collection assets and the assets required by the NMPB.
MWH scaling of DTZ valuations of ancillary assets to requirements of NMPB.		

We offer the following comments in support of the assumptions set out above, and with respect to (a) the practical feasibility and (b) the efficiency implications of the approach taken to establishing each input:

- The various assumptions employed in constructing the NMPB's fixed asset base have been subject to considerable independent expert input and review, and we have obtained independent confirmation that the notional asset base is appropriately configured and is consistent with the manufacture of the reference commodity products. It is therefore in our view practically feasible.
- Because the asset base is established independently of Fonterra's actual fixed asset costs, it is consistent with the efficiency criterion.

The Commission has concluded in previous reviews that it is satisfied that our assumed fixed asset capital costs are practically feasible. We have not made any substantive amendments to these assumptions for 2020/21.

Weighted Average Cost of Capital

The table below sets out the inputs, assumptions and processes used to determine the weighted average cost of capital assumed in the calculation of the Farmgate Milk Price:

Inputs	Process	Assumptions
5-year rolling average of monthly average 5-year government stock rates, as reported by RBNZ, adjusted for semi-annual coupon payments. 5-year average of average spread of 5-year A- rated debt issued by US industrials over US treasuries. Allowance for annualised debt issuance and other debt-related costs of 35 basis points. New Zealand company tax rate. Asset beta of 0.45, based on the analysis set out in Attachment 6. No specific risk premium, based on the analysis set out in Attachment 6. Assumption of tax-adjusted market risk premium of 7.0%. Assumption of debt:debt + equity ratio of 40%.	Use of the 'simplified Brennan-Lally' formula to convert inputs into a WACC modified to incorporate a specific risk premium (a WACC of 4.9% for the 2020/21 base milk price).	That the assumed asset beta appropriately reflects the systematic earnings risk to which the relevant portion of Fonterra's commodities and ingredients business is exposed, given the milk price methodology. That the approach to calculating WACC is appropriate. That use of 5-year rolling averages, rather than spot rates, does not leave Fonterra exposed to any incremental risk of not recovering its cost of capital over time on investments in assets equivalent to those assumed in the NMPB.

We offer the following comments in support of the assumptions set out above, and with respect to (a) the practical feasibility and (b) the efficiency implications of the approach taken to establishing each input:

- The use in the Farmgate Milk Price calculation of five year rolling average inputs in respect of the risk-free rate and debt premium results in the Farmgate Milk Price reasonably reflecting the capital costs faced by a processor which followed a prudent process of rolling over a constant proportion of its capital requirements each year, and is materially consistent with Fonterra's actual risk management policies. More generally, the approach reasonably reflects the actual costs that would be faced by a processor with a similar credit rating to Fonterra's, and which had a debt profile with similar maturity and refinancing profile to that assumed in the Farmgate Milk Price calculation, and is therefore practically feasible.
- Relevant inputs are set independently of the corresponding Fonterra values, and are therefore consistent with the efficiency criterion.
- The asset beta and specific risk premium reflect the Milk Price Group's assessment of practically feasible values, as set out in Attachment 6.

Tilted Annuity Methodology

The table below sets out the inputs, assumptions and processes used to determine the weighted average cost of capital assumed in the calculation of the Farmgate Milk Price:

Inputs	Process	Assumptions
Outputs from process of establishing asset base (including spread-back	Use 'tilted annuity' formula to derive annuities in respect of assets (a) falling	That this approach results in a stream of capital charges that over an asset's expected life fully

over prior years) and WACC. Forecast of long-run rate of inflation in capital costs.	in each 'economic life' category and (b) for each assumed acquisition year. Decompose calculated annuities into implied depreciation and WACC components, with depreciation calculated as the change in present value of remaining annuities.	recovers (a) the asset's initial cost and (b) an appropriate cost of capital on unrecovered capital costs. That the time profile of capital recoveries generated using this approach is reasonable.

We offer the following comments in support of the assumptions set out above, and with respect to (a) the practical feasibility and (b) the efficiency implications of the approach taken to establishing each input:

- The tilted annuity approach results in total annual capital costs (comprising depreciation, the 'WACC charge', or return on capital, and taxation) increasing over time at approximately the same rate as the rate of increase in capital costs, when calculated at a constant WACC. Consequently, annual capital costs assumed in the model are largely independent of the assumed timing of investment in plants. Under the obvious alternative approaches, however, assumed annual capital costs would have varied considerably depending on the specific assumptions made regarding the timing of investment decisions, and it would be difficult to make the case that any particular set of assumptions was 'correct'.
- The tilted annuity approach provides for full recovery of capital costs and a return on capital. Consequently, so long as the WACC and asset base assumptions are practically feasible, the aggregate of the WACC charge and depreciation recovery resulting from the application of the approach are necessarily also practically feasible.
- The tilted annuity methodology, given the approach taken to determining its inputs, results in a WACC charge and depreciation recovery that are independent of Fonterra's actual cost of capital and its actual depreciation expense, and are therefore consistent with the efficiency criterion.

Company Tax

The table below sets out the inputs, assumptions and processes used to determine the quantum and timing of the company tax assumed in the calculation of the Farmgate Milk Price:

Inputs	Process	Assumptions
NZ Company Tax Rate. Fonterra's weighted-average tax depreciation rate on assets relevant to the NMPB. The calculated EBIT of the NMPB.	Determine ratio of tax depreciation (given Fonterra's average tax depreciation rate) to 'tilted annuity' depreciation implied by the various key inputs into the tilted annuity calculation, and scale tilted annuity depreciation by this amount to derive an estimate of tax depreciation for the NMPB. Adjust the NMPB's calculated EBIT for the difference between tilted annuity and calculated tax depreciation to arrive at an estimate of taxable earnings, exclusive of any interest tax shield, and apply the company tax rate to this amount to assess tax payable. Spread calculated tax in three equal instalments over the course of the relevant season.	That the approach taken to deriving an estimate of tax depreciation is reasonable. That the omission of any further adjustments for items that would in practice be relevant to the calculation of taxable income will not result in any systematic bias in the calculation of tax payable.

We offer the following comments in support of the assumptions set out above, and with respect to (a) the practical feasibility and (b) the efficiency implications of the approach taken to establishing this input:

- The calculation generates a provision for tax depreciation that is consistent with applying Fonterra's weighted average tax depreciation rate for the relevant assets to the NMPB asset base, and is therefore practically feasible. (We note that the tax depreciation calculation is consistent with the assumption that the asset base of the NMPB has been installed in approximately equal instalments over, on average, the past 30 years or so. This is essentially a 'steady state' assumption, and means that the Farmgate Milk Price calculation does not capture the tax advantages available to a

processor with predominantly recently-installed assets, and which arise from the often significant differences between average tax and economic asset lives.)

- Because the provision is notional, it follows that it is consistent with the efficiency criterion.

Net Working Capital

The table below sets out the inputs, assumptions and processes used to determine the quantum and associated financing costs of net working capital assumed in the calculation of the Farmgate Milk Price:

Inputs	Process	Assumptions
Monthly net working capital balances implied by the NMPB phasings of milk supply, production, sales, and non-milk costs. Fonterra's weighted average debtor days for sales on terms used to determine the prices for sales of RCPs used in the milk price (i.e. primarily sales on GDT) for the most recently completed calendar year (i.e. the year to 31 December 2020). Fonterra's weighted average creditor days for costs relevant to the milk price. Fonterra's 'advance rate schedule', specifying timing and quantum of payments for milk supplied in the season. Assumptions with respect to inventories of inputs, such as lactose and packaging materials. The monthly compound WACC implied by the annual WACC.	Calculate implied opening net working capital (NWC) balances for each month. Apply the monthly WACC to the monthly NWC balance. Deduct the implied WACC charge in the course of calculating the amount available to pay for milk.	That use of Fonterra's weighted average debtor days for the set of 'price informing' sales used to calculate the base milk price is consistent with use of prices from the same source. That use of Fonterra's weighted average creditor days in respect of costs relevant to the milk price is consistent, where relevant, with use of Fonterra's input prices.

We offer the following comments in support of the assumptions set out above, and with respect to (a) the practical feasibility and (b) the efficiency implications of the approach taken to establishing each input:

- Because the key determinants of the monthly working capital balances assumed in the Farmgate Milk Price (milk supply profile, sales phasings, cost phasings, credit and debtor days, advance rate schedule) are all aligned to the relevant Fonterra actuals, it follows that the derived balances are practically feasible.
- While the various inputs are all derived from Fonterra data, the Farmgate Milk Price calculation does not result in Fonterra's actual current year working capital balances (or components thereof) being included in the Farmgate Milk Price, so the methodology is therefore consistent with the efficiency criterion.

8 Overall Consistency of Inputs, Processes and Assumptions Used to Calculate the Farmgate Milk Price

We comment in this section on:

- The overall internal consistency of the various inputs, assumptions and processes described in sections 4-7 above, and summarise the reasons why, in our view, the Farmgate Milk Price resulting from the application of these inputs, assumptions and processes is consistent with section 150A. In particular, we have set out above the reasons why we consider each of the inputs used in calculating the Farmgate Milk Price is individually consistent with section 150A. The Commission has also

noted, however, that section 150A effectively requires that there also be overall consistency among the assumptions and inputs used to calculate the base milk price.

- The overall consistency of the projected Farmgate Milk Price with the contestability dimension of section 150A.
- The overall consistency of the projected Farmgate Milk Price with the efficiency dimension of section 150A.

Internal Consistency

We provide comments in the table below on matters relevant to considering the internal consistency of the various inputs and assumptions used in the Farmgate Milk Price (these largely repeat and consolidate arguments presented in sections 4-7 above).

Input	Interdependencies	Comments on Consistency
Production mix and volumes	Milk supply and composition	The calculation process ensures the assumed product mix is consistent with Fonterra's allocation of milk to relevant streams, and with Fonterra's actual milk supply.
	Yields	The assumed yields are a function of composition, loss assumptions and specification assumptions, all of which are consistent with values actually achieved/achievable by Fonterra for the manufacture of RCPs.
	Automation and process control capital and opex	Fonterra's achieved yields reflect Fonterra's investment in automation process and control systems, and in dedicated staff who ensure the systems are used to tightly control yields. The NPMB appropriately provides for these costs.
	Direct manufacturing costs	Calculated to be consistent with the assumed product mix, drawing on a mix of independent expert input and relevant data on Fonterra's actual costs.
	Manufacturing capital	Established on a forward-looking basis to be consistent with (a) forecast milk supply and (b) manufacture of the RCP portfolio. Assumed costs reconcile to manufacturer quotations and costs actually incurred by Fonterra.
	Fixed asset capital costs	Calculated to result in the recovery of capital cost of manufacturing and collection assets, and of WACC return on undepreciated cost.
Prices	Product composition	Composition of RCPs is consistent with composition of product actually sold by Fonterra through the sales channels reflected in the milk price.
	Selling costs	Selling costs are calculated to be consistent with the assumption that product is sold at arm's length terms both on and off GDT, including material provision for customer support.
	Ocean freight recoveries	Consistent with Fonterra's actual recoveries, which will on average be factored into selling prices.
	Sales phasings	Use of Fonterra's phasings means any pricing impact of variations in Fonterra's actual sales of RCPs will also be reflected in the milk price.
Collection costs	Milk supply	Use of Fonterra's actual milk supply is consistent with the use of Fonterra's actual collection costs.
	Site footprint	Alignment of assumed NMPB site footprint to Fonterra's is consistent with the use of Fonterra's actual collection costs.
Lactose cost	Yields	Lactose usage requirements are consistent with milk composition and product composition assumptions.
	Lactose price	Lactose price is consistent with prices paid by importers of lactose for powder standardisation.

Input	Interdependencies	Comments on Consistency
Site overhead costs	Site and asset footprint	Site-level overhead costs are consistent with assumed site footprint and product mix.
Logistics costs	Production volumes	Inland freight and storage costs are consistent with production volumes and product mix.
	Site footprint	Calculation of logistics costs is consistent with assumed site locations and assumed throughput of milk through each site.
Overhead costs	Scope of NMPB business	Assumed overhead costs are consistent with activities of NMPB, including manufacture of RCPs and primary activities all being located in New Zealand.
Net working capital costs	Sales phasings and production phasings	Net working capital balances are consistent with inventory volumes implied by the sales phasings, product mix and phasing of milk supply.
	Average receivables days for sales incorporated in calculation of average selling prices	Use of Fonterra's weighted average receivables days for the sales used to calculate Milk Price revenue is consistent with use of prices from those sales (on the basis that prices paid will reflect the relevant terms of supply).
	Fonterra's average payable days (including for milk)	Use of Fonterra's average payable days (where relevant) is consistent with use of cost inputs derived from Fonterra actual data.
	WACC	Use of WACC to calculate capital charge on monthly net working capital balances is consistent with the assumption that the leverage assumed in the WACC calculation reasonably reflects average debt to debt plus equity through the course of a season for a commodity manufacturer of the NMPB's scale.
Fixed asset capital costs	Production volumes	The fixed asset base is consistent with production of the RCPs, and is of sufficient scale to manufacture the volume of RCPs assumed in the Milk Price (including where relevant the manufacture of unstandardised milk powders).
	Site footprint	The fixed asset base includes appropriate provision for site-level assets given the configuration of the site footprint, and assumed peak milk supply to each site.
	WACC	Inputs into the WACC reasonably reflect the average cost of capital for a manufacturer of the NMPB's scale, and which uses the Farmgate Milk Price methodology to determine its cost of milk.

Overall Consistency with Contestability Dimension of Section 150A

Sections 150B and 150C respectively permit (section 150B) and require (section150C) that the Farmgate Milk Price calculation incorporates the following assumptions:

- Fonterra's scale, including Fonterra's milk supply and site footprint.
- Fonterra's average plant size for the manufacture of the RCPs.
- Fonterra's average foreign currency conversion rate.
- That all milk is assumed to be manufactured into the RCPs that are expected to be the most profitable.
- The conversion of milk into RCPs at yields that are practically feasible.
- The use of prices actually achieved by Fonterra on the sale of RCPs.
- That the full range of costs that would be incurred by a manufacturer of Fonterra's scale in manufacturing the RCPs is taken into account.

Various submissions to the Commission, including on the Commission's Dry Run report, the Commission's subsequent process and issues papers, and the Commission's reports on the F13-F121 Manual reviews and F13-F20 base milk price reviews, have in essence argued that incorporation of these assumptions necessarily results in a Farmgate Milk Price that is not practically feasible for any New Zealand processor. We do not share this view, and note in particular the following aspects of the Farmgate Milk Price that are not 'fully optimised':

- The assumption of Fonterra's actual site footprint (a safe harbour rather than mandatory assumption): Fonterra's actual site footprint primarily reflects historic investment decisions made by Fonterra's predecessor companies, and implies the incorporation in the milk price of capital and overhead costs that are materially higher than the costs that would have arisen had a 'greenfields' approach been taken to establishing the NMPB's site and asset footprint.
- The assumption of Fonterra's actual milk supply (also a safe harbour rather than mandatory assumption): Fonterra currently has very limited ability under DIRA to decline supply, and consequently incurs materially higher collection costs per kgMS than other processors. While there are some offsetting scale economies, the Farmgate Milk Price would nonetheless be materially higher if it was calculated under the assumption that the NMPB only collected the milk supplied to Fonterra that would be collected by a profit-maximising processor that was not subject to DIRA.
- The assumption that the NMPB participates on GDT on an arm's length basis, with the difference between the calculated arm's length fee and Fonterra's lower actual costs therefore being excluded from the Farmgate Milk Price.
- The assumption that the NMPB, like Fonterra, faces logistical constraints which mean (a) it must carry materially more inventory (and therefore incur materially higher working capital costs) over the peak production months and (b) has less ability to take advantage of favourable short term movements in prices over the same period, relative to smaller processors.
- The assumption that the NMPB, like Fonterra, is not able to take advantage of regulated raw milk under DIRA to increase (and obtain increased certainty over) capacity utilisation.
- The 'bottom up' approach described in section 6 and Attachment 1 to calculating overhead and administrative costs by reference to Fonterra's actual costs, which has the effect, for example, of impounding in the Farmgate Milk Price the higher costs associated with some of Fonterra's legacy IT systems, relative to the alternative of taking a 'greenfields' approach to establishing the NMPB's IS requirements and costs.
- The assumption that the NMPB, like Fonterra, incurs various costs of an 'industry good' nature that would not be incurred by a smaller processor.

Overall Consistency with Efficiency Dimension of Section 150A

We noted in our comments on the individual inputs into the Farmgate Milk Price certain instances where inputs are based on current year Fonterra actual data, and in respect of which there is therefore a weakened incentive (relative to the use of a notional input) for Fonterra to operate efficiently in respect of the relevant factor.

We consider, however, that when considered in aggregate the inputs, processes and assumptions used to calculate the proposed Farmgate Milk Price are consistent with the efficiency dimension of section 150A. In particular, we note that:

- Most of the cost inputs into the projected Farmgate Milk Price are calculated independently of current year actual Fonterra data (70 per cent of the cost inputs into the 2013/14 Farmgate Milk Price were fully independent and a further 22 per cent were partially independent of actual Fonterra data, and we have no cause to believe similar proportions do not apply for the 2020/21 season).
- Fonterra is unable to directly influence the primary factors impacting on the NMB's revenue, comprising actual milk supply and composition, independently established provisions for yields and GDT prices.
- Putting to one side considerations as to whether Fonterra is fully incentivised to optimise its performance with respect to individual cost and revenue inputs into the Farmgate Milk Price, Fonterra is appropriately incentivised to ensure that the overall Farmgate Milk Price is consistent with maintaining and growing milk supply (i.e. to ensure the Farmgate Milk Price is perceived to be

‘competitive’), but that the Farmgate Milk Price is not so high as to render Fonterra’s incremental investment decisions uneconomic.

Attachment 1: Activities Provided for in Provision for Overhead and Administrative Costs

We list below the full range of Fonterra's activities provided for in the overall provision for overhead and administrative costs, and comment briefly on the approach taken with respect to each item. The comments below in many instances note that Fonterra's 'actual' costs, or portions thereof, are included in the Farmgate Milk Price calculation. The 'actual' costs referenced relate to Fonterra's F20 budget. This approach leaves Fonterra appropriately incentivised to minimise its actual costs.

Category	Comment
Supplier and External Relations, comprising costs associated with:	
Milk supply	100% of Fonterra's budgeted F20 costs associated with monitoring and surveillance, area managers and supplier-related IS costs included in milk price costs.
Sustainability	Fonterra incurs considerable cost (much of which would not be incurred by other processors, and which can therefore be considered a 'diseconomy' of scale) on matters such as effluent management, reducing waste and energy consumption, developing water strategies, and providing input local and central government policy formation. Most of these costs have been included in the milk price calculation.
External relations	Again, Fonterra incurs costs that would not necessarily be incurred by other processors, but which it can be argued are necessary for a manufacturer of the NMPB's scale to maintain milk supply. These costs are largely included in the milk price calculation.
Trade strategy	Similarly, Fonterra incurs costs in ensuring its (and the wider industry's) interests are considered in trade negotiations and the like that are unlikely to be incurred by other processors, but which it can be argued are necessary for a manufacturer of the NMPB's scale to maintain milk supply. These costs are fully included in the milk price calculation.
Corporate marketing	Fonterra incurs marketing costs in relating, for example, to positioning dairy as a nutritional and healthy option, to funding initiatives in local communities, and in respect of environmental sustainability. These costs are largely included in the milk price calculation though, again, it is likely that at least a portion would not be incurred by a smaller-scale processor.
Governance costs, comprising costs associated with:	
Board of Directors	Fonterra's actual costs, with a modest reduction to provide for the difference in scope of activities between Fonterra and the NMPB, are included in the Farmgate Milk Price calculation.
Milk Price Group	The milk price calculation includes a provision for the various costs associated with the operation and maintenance of the Farmgate Milk Price methodology, though we again note that equivalent costs would generally not be incurred by other processors.
Co-operative Council	While again not necessarily relevant to most processors, the milk price calculation reflects most of the costs associated with maintaining Fonterra's Co-operative Council.
Human Resources	Milk price provision based on Fonterra's actual costs, scaled for difference in head-count.
Costs associated with finance function:	
Transactional support (AP and AR etc), administration of capex, periodic reporting etc	Based on Fonterra's actual costs, adjusted to exclude costs incurred by Fonterra that would not be incurred by the NMPB, including costs relating to Fonterra's offshore operations, such as a portion of Fonterra's external audit fee and portions of its legal and tax function costs. Where costs relate to

Financial reporting, budgeting and forecasting	activities that would be materially identical for the NMPB, Fonterra's actual costs have been included in their entirety. In some instances Fonterra's actual costs are further adjusted to reflect differences in the complexity of Fonterra's business. The relevant actual cost of Fonterra's Treasury operation is included, for example, with the excluded portion primarily reflecting Treasury-related costs attributable to Fonterra's extensive network of offshore subsidiaries and businesses.
Communications	
Treasury	
Legal	
Internal Audit	
Share Registry and Payments	
Strategy and Corporate Finance	
Group Tax	
Policy and Risk	
Regulatory	
Customs	
Property	
IS costs	Based on Fonterra's actual costs (which incur costs associated with legacy systems and historic IS investments, not all of which would have been incurred by the NMPB) scaled to reflect differences in characteristics and activities of the NMPB relative to Fonterra.
Senior management team	Based on the senior management team for Fonterra's New Zealand manufacturing operations, adjusted where appropriate to include functions captured elsewhere.
Manufacturing overhead costs, including costs associated with:	
Quality assurance and technical management	Based on Fonterra's actual costs, adjusted to exclude costs incurred by Fonterra that would not be incurred by the NMPB, including costs relating to Fonterra's offshore operations.
Automation, process control and calibration	
Quality and complaints	
Environmental	
Grading	
Capital maintenance and assets	
Innovation	
Optimisation and strategy (including production planning)	
Procurement	

Attachment 2: Additional Material Provided to the Commission in Support of Fonterra's Reasons

The table below summarises additional material, much of which the content of is commercially confidential to Fonterra, that has been provided to the Commission in support of certain statements made in this document, and which should therefore be considered in conjunction with this document.

Category	Sub Category	File Name
Models	Jan-31 2021	F21 Jan Shipment Model.xlsb
Models	Jan-31 2021	F21 Jan Contracts Download Adjusted.xlsb
Models	Jan-31 2021	F21 Jan Contracts Download Raw.xlsb
Models	Jan-31 2021	F21 Jan Production Plan.xlsb
Models	Jan-31 2021	Carbon Prices_ January 2021 Model.xlsb
Models	Jan-31 2021	Capital Costs - new assets from F12 model at 26 Jan 2021.xlsm
Models	Jan-31 2021	YTD Composition.xlsx
Models	Jan-31 2021	Capital Costs - old assets to F12 model at 28 May 2020.xlsm
Models	Jan-31 2021	MPT Closing Stock Jan 21.xlsm
Models	Jan-31 2021	Lactose YTD Import Stats.XLSX
Models	Jan-31 2021	FACR Scenarios 2021-01.xlsx
Models	Jan-31 2021	F21 YTD Milk Solids.xlsx
Models	Jan-31 2021	F21 January Sales Phasings Model.xlsb
Models	Jan-31 2021	F21 January Lactose Price Model.xlsb
Models	Jan-31 2021	F21 January Milk Price Reporting Model.xlsb
Models	Jan-31 2021	F21 Milk Collection Costs.xlsx
Models	Jan-31 2021	F21 January Make Allowance Model.xlsb
Models	Jan-31 2021	F21 Jan Shipments Download Adjusted.xlsb
Models	Jan-31 2021	F21 January Implied Shipment Model.xlsb
Models	Jan-31 2021	F21 Jan Shipments Download Raw.xlsb
Models	Jan-31 2021	F21 Jan YTG Milk Solids.xlsb
Models	Jan-31 2021	F21 January Diversion Costs Model.xlsb
Models	Jan-31 2021	F21 Jan Uncontracted Price Forecast.xlsx
Models	Jan-31 2021	10 Year WACC Forecast F21 21 Jan 2021.xlsm
Models	May-31 2021	F21 May Implied Shipment Model.xlsb
Models	May-31 2021	F21 May Shipment Model.xlsb
Models	May-31 2021	F21 May Shipments Download Adjusted.xlsb
Models	May-31 2021	F21 May Sales Phasings Model.xlsb
Models	May-31 2021	F21 May Production Plan.xlsb
Models	May-31 2021	F21 May Shipments Download Raw.xlsb
Models	May-31 2021	Capital Costs - new assets from F12 model at 25 May 2021.xlsm
Models	May-31 2021	F21 May Uncontracted Price Forecast.xlsm
Models	May-31 2021	F21 YTD Milk Solids.xlsx

Category	Sub Category	File Name
Models	May-31 2021	F21 May YTG Milk Solids.xlsb
Models	May-31 2021	F21 Milk Collection Costs
Models	May-31 2021	FACR Scenarios 2021-05.xlsx
Models	May-31 2021	Capital Costs - old assets to F12 model at 25 May 2021.xlsm
Models	May-31 2021	YTD Composition.xlsx
Models	May-31 2021	Lactose YTD Import Stats.XLSX
Models	May-31 2021	F21 May Contracts Download Adjusted.xlsb
Models	May-31 2021	Carbon Prices_ May 2021 Model.xlsb
Models	May-31 2021	MPT Closing Stock May 21.xlsx
Models	May-31 2021	F21 May Milk Price Reporting Model.xlsb
Models	May-31 2021	F21 May Lactose Price Model.xlsb
Models	May-31 2021	F21 May Make Allowance Model.xlsb
Models	May-31 2021	F21 May Contracts Download Raw.xlsb
Models	May-31 2021	F21 May Diversion Costs Model.xlsb
Models	May-31 2021	10 Year WACC Forecast for F21
Sundry	Jun-30 2021	Information Request Register 2020-21 season 22 June 2021.xlsx
Sundry	Jun-30 2021	2030 Farm Source - to ComCom 23 June 2021.pdf
Sundry	Jun-30 2021	Future Operating Environment (milk supply outlook) to ComCom 23 June 2021.pdf
Sundry	Jun-30 2021	Off-GDT price deltas at 31 May 2021.pdf
Sundry	Jun-30 2020	5.2 MPG Paper Reference Commodity Review F21.docx
Sundry	Jun-30 2021	5.2 MPG Paper Reference Commodity Review F22.docx
Sundry	Jun-30 2021	Tina Gandell, Product Composition Review F21 2020-05-05.pdf
Sundry	Jun-30 2021	Tina Gandell, F21 Milk Price Losses 2019-09-29 (Updated).pdf
Sundry	Jun-30 2021	Tina Gandell, F21 Milk Price Effluent Losses 2020-06-15.pdf

Attachment 3: Milk Price Fixed Assets – Supplementary Information

We provide summary information below on various aspects of the manufacturing plants assumed in the base milk price calculation.

Number of Manufacturing Plants by Vintage	Pre-2012	New Plants Post-2012
Powder (including BMP)	37 (original 49 plants less 12 plants retired)	10 (5 replacement plants + 5 new plants for milk growth)
Cream (butter/AMF)	10	

Number of Plants by Region	North Island	South Island
Powder (including BMP)	28	19
Cream (butter/AMF)	7	3

Number of Plants by Type	Number
WMP	26
SMP	17
BMP	4
Butter	6
AMF	4

In brief, the NMPB process plants are specified as follows:

- Minimum solution costs with proven modern technology.
- Plants designed and priced to the quality requirements and engineering standards that the Contractor normally provides to meet international dairy factory standards.
- The process plants include the advanced automation and process control (A&PC) capability used by Fonterra to deliver operational efficiencies (e.g., composition control, drier throughput / stability etc).
- The design of the process plant must meet typical raw milk characteristics similar to Fonterra's requirements/specifications and finished product specifications typical of product sold on GDT.
- The scope of the milk powder process plant covers milk reception, milk treatment, evaporation, a drier inclusive of fluid beds, lactose reconstitution, powder storage and handling, powder packing and palletising and a building to house the process plant.

The Milk Powder process plant capital allowance includes provision for 17 x 24 hours dedicated SMP driers and 26 x 24 hours dedicated WMP driers capable of processing (on average) 2,000m³/day of whole milk (average of new and old plants), with plant reliability of greater than 96% On Product Time (i.e. multiple evaporators to enable continuous running of the drier).

The buttermilk processing capital allowance includes provision for 4 x 21 hour per day dedicated BMP plants capable of processing 800 m³/day of buttermilk.

The scope of the BMP plant covers buttermilk storage, buttermilk treatment, evaporation, drying, lactose reconstitution, powder handling and storage, packing and palletising and a building to house the process plant.

The cream processing capital allowance includes provision for 4 x 20 hour per day AMF plants capable of processing 500 m³/day of cream and 6 x 20 hour per day Butter plants capable of processing 500 m³/day of cream.

The AMF plant scope covers cream storage, separators, AMF processing, deodorisation and dehydration, AMF storage with nitrogen blanketing, drumming, fat recovery tanks, buttermilk storage and buildings to house the process plant.

The Butter plant scope covers cream silos, cream treatment, crystallising silos, Fritz butter making, butter silos, packing into 25 kg film wrapped blocks in wrap around cartons, a rapid cool system for cartons, palletisation and buildings to house the process plant.

The scope of the site infrastructure includes the supply of services to the process plant, wastewater handling and treatment, the dry store and all civil and building works outside the process plant building inclusive of amenities, laboratory (where applicable), milk collection depot (where applicable), administration offices, a meeting room and a plant workshop. Services and effluent treatment infrastructure on sites in the NMPB match Fonterra's for consistency with the Fonterra-based energy and waste treatment costs provided for in the NMPB operating costs.

Attachment 4: Loss Allowances – Supplementary Information

We provide summary information below about the approach taken to establishing allowances for losses of milk in the manufacturing process. As explained above, we separately provide for losses in milk reception, treatment and standardisation, and for effluent losses, stockfood losses and 'overweight' losses.

The allowances for effluent losses have been determined from detailed loss surveys carried out at Fonterra factories running as far as possible, in a similar manner and with similar technology and operating processes as the Milk Price assumptions. These loss surveys are generally carried out over a 10-day period when the Fonterra factories are running at or close to full capacity. The losses measured therefore represent the loss per tonne of product at peak.

The NMPB processes the same milk over the same seasonal pattern as Fonterra. Therefore, the NMPB factories do not operate at full capacity all year round. The NMPB can move milk from its collection areas to maximise the length of time some factories remain full, by pulling milk from others to shorten their operating season. A detailed exercise was undertaken in 2014 to establish how this would work and it was determined that, based on the FY14 season, the NMPB factories on average would operate at peak capacity for around 85-90% of their total operating days. There will be some variation in this between seasons as climate and other factors affect milk production across a season.

When our external technical expert, Tina Gandell, reviews the Fonterra loss data, she determines which of the losses would be incurred on a daily basis regardless of milk volume processed by the factory - effectively the losses which occur on unique plant items (i.e., not duplicated) and where the loss event happens only once a day or less frequently, and cannot be mitigated by a well-run plant operating to the practically efficient standard set for the Milk Price, when the factory is processing at less than full capacity.

Effluent losses per tonne that are considered fixed on a daily basis are increased by a factor to take into account the average annual average operating days compared to production days at peak capacity for the milk price.

In addition, it has been suggested that at the start of each season, there could be additional losses on each plant because time is needed to optimise the plant running after the winter shut down. However, Ms Gandell considers that given the level of investment in technology, staff training, IT, systems and management in the NMPB, and assuming it operates at a practically efficient standard, the NMPB would be able to mitigate any additional start of season loss to levels that would not have a significant impact on overall annual losses.

It is generally not feasible to use actual Fonterra data on start of season performance to determine appropriate loss allowances for the NMPB as the Fonterra plants with similar technology and operating processes are typically not running under similar operating conditions as the milk price assumptions. Fonterra faces a different set of product mix constraints, given its production of products other than the reference products, and typically manufactures non-standard and customer-specific products at the beginning of a season, implying shorter run lengths.

Attachment 5: Decision Criteria and Processes for Identifying off-GDT 'Price Include' Sales

We provide additional information below on the process and criteria used to identify the sales that are used to determine weighted average FAS prices in the base milk price revenue calculation. These processes and criteria are identical to those applied in 2018/19.

The primary detailed rules governing the selection of the subset of sales of RCPs made by Fonterra that are used to establish the weighted average shipment month prices used in the milk price revenue calculation are set out in the definitions of Benchmark Selling Price, Qualifying Material and Qualifying Reference Sales in Part C of the Manual.

The definition of Qualifying Materials provides that the only product specifications to be included in the milk price revenue calculation are "relatively undifferentiated commodity product[s] that in normal circumstances could be expected to transact at a comparable price to other products within the same Reference Commodity Product, after adjusting for any costs that are normally recoverable from purchasers of the product." In particular, the Manual provides that a product can be a Qualifying Material if:

- It is a **Standard Product Offering**
- Its packaging format is **Standard Packaging**, and
- Its manufacture does not require the use of **Specialised Plant**.

A **Standard Product Offering** is an RCP which:

1. Is sold on GDT, or
2. Is a generic product specification which:
    a. is sold in multiple regions
    b. is sold to multiple customers
    c. is sold through Fonterra's standard sales channels, and
    d. can be substituted for other **Standard Product Offerings**

Standard Packaging is defined as packaging formats used for **Standard Product Offerings** and excludes packaging formats used primarily for product sold through consumer and foodservice channels.

The definition of Qualifying Reference Sales provides that sales of Qualifying Materials (i.e., of relatively undifferentiated commodity products) are included in the milk price revenue calculation if (and only if) "the sale can reasonably be regarded as being on arm's length terms at a price that reflects prevailing prices that could be achieved by the Farmgate Milk Price Commodity Business [or NMPB] at the time the contract for the sale is entered into." Among other things, this definition is intended to exclude sales from in-market warehouses, on the basis that the NMPB's operations are assumed to be materially confined to New Zealand, and sales under longer term 'fixed price' or 'formulaic pricing' arrangements that do not closely reflect current market prices.

The definition of Benchmark Selling Price sets out the process used to establish weighted average shipment month prices for each RCP, and provides that only sales contracted for shipment between one and five months (inclusive) are used in the revenue calculation.

The table below provides further detail on the approach applied in practice to determine whether a particular product specification satisfies the 'relatively undifferentiated commodity product test'.

Milk Price Revenue Informing Inclusions	Milk Price Revenue Exclusions
Standard material requiring no additional specialised plant or technical resources	Non-standard materials – e.g. pastry butter / spreadable butter - AMF - ghee crystalline, AMF fractionated materials, SMP base powder for use in nutritional powders via dry blending

Milk Price Revenue Informing Inclusions	Milk Price Revenue Exclusions
Standard product offering	Non-standard offerings - e.g. butter containing high moisture content
Standard packaging	Non-standard packaging, packaging less than 25kg, AMF - materials packed in cartons, WMP in bulk bags.
Cascadable to general trade materials (i.e., can be used to satisfy an order for a standard product offering, such as regular WMP, without any additional notification to the customer)	Non-cascadable to general trade materials; SMP/ WMP with additional fortification (calcium or iron) materials, e.g. fortified WMP

The following table provides further detail on the inclusion/exclusion tests that follow from the specific language in the definitions of Qualifying Reference Sale and Benchmark Selling Price (noting that products that do not satisfy the Qualifying Materials criteria have already been filtered out prior to consideration of the tests below).

Milk Price Revenue Informing Inclusions	Milk Price Revenue Exclusions
FAS equivalent GDT sales and non-GDT sales	Tenders, ex-warehouse, intercompany sales
C1 – C5 contract tenor	C0 and C6+ contract tenor
Spot pricing mechanism in contract	Tailored customer pricing models