NZFBF
NEW ZEALAND FINANCIAL BENCHMARK FACILITY
TE POU HERENGA PŪTEA O AOTEAROA

NZ Credit Markets (NZNG) Closing Rate Methodology

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NEW ZEALAND FINANCIAL BENCHMARK FACILITY LIMITED

Level 12, ANZ Centre, 171 Featherston Street, Wellington, 6011
Phone: 04 333 1377 | Email: helpdesk@nzfbf.co.nz | Website: www.nzfbf.co.nz

NZ Credit Markets Closing Rate Pricing Service (NZNG)

Methodology

1.0 INTRODUCTION

The methodology for the NZNG Closing Rate market should be read in conjunction with the Closing Rate Operating Guidelines and Principles. This document is available on the NZFBF website.

This document has been derived with the objective of ensuring:

- Compliance with the New Zealand benchmark administration licensing regime overseen by the FMA;
- Where appropriate, the alignment with the IOSCO Principles for Financial Benchmarks;
- A transparent Closing Rate process is maintained; and,
- Conformance with global best practice.

NZ Credit Markets (NZNG) - The New Zealand Credit Markets Closing mid-rates represent pricing in outright yield on a range of vanilla Corporate, Local Authority and Kauri fixed income instruments as well as pricing for non-vanilla Corporate, Local Authority and Kauri fixed income instruments, and Floating Rate Notes. The definition of a non-vanilla bond can be found section 4 – appendix.

This document should be read in conjunction with the following NZFBF publications, all of which can be found on the NZFBF website:

- NZFBF Board Charter;
- NZFBF Constitution;
- NZFBF Code of Conduct & Conflicts of Interest;
- NZFBF Governance Conflicts Management Plan;
- NZFBF Complaint Process; and,
- NZFBF Whistle Blowing Process.

2.0 CAPTURE, CALCULATION AND PUBLICATION OF NZNG CLOSING RATES

2.1 Source of Data

Quotations for each security, where available, will be extracted from Bloomberg ALLQ pages. The current Price-makers are:

ANZ Bank New Zealand Limited
Commonwealth Bank of Australia
Bank of New Zealand
Westpac Banking Corporation – New Zealand Branch

The two-way quotations appearing on ALLQ can be updated instantaneously by Price-makers and are considered live quotes. This includes the actual bid and offer rates (yields or prices) and volumes published on either side of the market.

The following data is extracted from the respective ALLQ pages:

- Pricing Source (PCS)
- Bid
- Ask (Offer)
- Bid Size
- Ask (Offer) Size
- Time stamp of last update

The quotations published are deal-able on a RFQ basis whereby a counterparty will request either a two-way quote or a specific bid or offer in a specified volume based on the pricing observed on screen. This RFQ will “pop up” on the Price-maker’s Bloomberg and they can either accept or reject the terms of the RFQ or respond with amended pricing (either an improvement or deterioration).

2.2 Time of Data Snap

16:32 NZT

Three data snaps prior to the 16:32 closing snap will be carried out at randomised intervals from 16:15 onwards. This data will be stored in accordance with the audit trail protocol outlined in section 5.3 of the Operating Guidelines and Principles and can also be used as part of the contingency procedures as outlined in section 2.6.

An additional data snap will be taken at 14:00 and utilised in the contingency procedures if initiated.

If a Price-maker is not publishing to Bloomberg on any of the four pre-close snaps, an email will be sent from the NZFBF Helpdesk requesting that they resume publishing prices.

2.3 Calculation Methodology (Vanilla Fixed Rate Notes - Yield)

The NZ Credit market methodology is sub-categorised into two sections:

Outlier Checks: For each security, an average of all included Price-makers' bid yields and all included Price-makers' offer yields quoted on ALLQ is calculated. Once an average of all bid yields and all offer yields has been determined, the standard deviation is calculated to determine if any outliers are required to be excluded (Refer to 3. & 4. below). This is to ensure that some outlier quotations do not have a biased influence on the calculation process.

Application of Weightings: Following any exclusions of other quotations, various weightings are applied to the remaining quotations with higher weightings applied to those that are more aggressive and comply with pre-determined minimum parcels sizes (and vice versa). These weightings are designed to ensure that quotations which are more aggressive and/or quoted in a market parcel size have a greater degree of influence on the Closing Rate. For example, a bid yield that is in a market parcel size that is lower than the other quoted bid yields in a non-market parcel size will receive a higher weighting than those other bid yields.

A step-by-step calculation process is outlined below:

1. Data is obtained in accordance with protocols outlined in sections 2.1 & 2.2 above.
2. For each security:
    a. Take average of:
        (i) all available Price-maker bid quotations; and
        (ii) all available Price-maker offer quotations.
3. For bid quotations, remove:
    a. any quotation one or more than one standard deviation **higher than** the average unless the quotation is the only one for a market parcel size **and/or**;
    b. any non-market parcel size quotation one or more than one standard deviation **lower than** the average quotation.
4. For offer quotations, remove:
    a. any quotation one or more than one standard deviation **lower than** the average unless the quotation is the only one for a market parcel size **and/or;**
    b. any non-market parcel size one or more than one standard deviation **higher than** the average quotation.
5. Following the exclusion process, a weighted average methodology is applied to the remaining quotations. Each remaining quotation is sub-categorised into a different quotation type and then assigned a pre-determined weighting:

Best bid / offer market parcel size: Lowest bid yield or highest offer yield amongst prices in at least the specified market parcel size (volume). (Refer to Table 1 for market parcel sizes). May not be the lowest bid yield or highest offer yield overall, if more aggressive prices are in less than a market parcel size. This is considered the most robust type of quotation and hence receives the highest weighting.

Other bid / offer market parcel size: Market parcel size that meets minimum criteria however the yield is not the lowest bid yield or highest offer yield.

Best bid / offer indicative: Lowest bid yield or highest offer yield **not** in minimum market parcel size. Must be the lowest bid yield or highest offer yield overall.

Other bid / offer indicative: not the lowest bid or highest offer **and not** in minimum market parcel size. This is considered the weakest type of quotation given its indicative nature and associated volume and hence receives the lowest weighting.

Excluded: Quotations that are excluded via the standard deviation process are automatically assigned a zero weighting.

These are considered outliers and are not used in the calculation process given the potential to adversely impact the Closing Rate for the respective security.

Refer to Table 2 for the pre-determined weightings.

6. A scaling factor is then used to determine the weighting applied to bids and offers that are less than the market parcel size but greater than zero volume. Follow the steps to calculate:
   a) Is the quotation volume less than market parcel size or greater than zero? If yes – scaling factor to be applied.
   b) Is the quotation the best bid or best offer?
      i. Yes – take the weightings for best bid/offer market parcel size (1.0) and the best bid/offer indicative (zero volume) (0.30). The scaling factor is calculated by interpolating between these weightings – based on volume attached to the quotation.
      ii. No – take the weightings for other bid/offer market parcel size (0.65) and other bid/offer indicative (zero volume) (0.20). The scaling factor is calculated by interpolating between these weightings – based on volume attached to the quotation.
      iii. No additional weightings are to be applied to quotations where volumes are greater than the pre-determined market parcel.
      iv. See Table 3 for examples.

7. Following the allocation of the weightings to each quotation (bid or offer), the weighted average bid/offer is derived by summing:
   Each bid/offer yield * (Applied Wtg / Σ All Bid/Offer weightings).

8. The Closing Rate for each security is determined by:
   (Weighted average bid yield + Weighting average offer yield) / 2.

9. Yields are calculated to four decimal places and are rounded to the nearest quarter basis point. For example, 0.9669 is rounded to 0.9675.

10. No quorum of Price-makers is required. If the Closing Rate is calculated using two or less quotations, it is marked with No in Column H (Quorum) in the subscriber spreadsheet.

11. If there are no updated bid and/or offer quotations available from all the Price-makers simultaneously, Appendix IV sets out for the contingency procedures which will operate.

12. The NZNG market has a material error threshold of '10% of a securities credit spread or 5.00 basis points', whichever is greater. This indicates that if a security has a credit spread of 100, any error of 10 basis points or more would require NZFBF to recalculate the NZNG Closing Rates and republish the market.

Table 1 – Market parcel sizes

Instrument	Market parcel	Maximum bid v offer spread (bp)
Credit (including <AAA rated Kauri from any of the 3 major rating agencies)	$1 million	n/a
Supranational (AAA rated Kauri)	$2 million	n/a
NZLGFA	$2 million	n/a

Table 2 – Weightings based on Quotation type

Quotation Type	Weighting
Best bid / offer market parcel	1.0
Other bid / offer market parcel	0.65
Best bid / offer indicative (zero volume)	0.30
Other bid / offer indicative (zero volume)	0.20
Excluded	0.0

These weightings have been formulated by the Price-makers and are designed to ensure that quotations that are more aggressive or are quoted with a market parcel size have a greater influence on the Closing Rate (and vice versa). Pre implementation, these weightings were subject to parallel and stress testing to ensure that they did not substantially deviate from previous methodologies. Periodic reviews by the Credit Markets Committee will be

undertaken to ensure these weightings remain relevant and contribute to an accurate determination of the Closing Rates.

Table 3 – Scaling factor example

Volume	Scaling factor for **best** bid /offer	Scaling factor for **other** bid /offer
1,000,000*	1.0 (as above)	0.65 (as above)
800,000	0.86	0.56
600,000	0.72	0.47
500,000	0.65	0.425
400,000	0.58	0.38
250,000	0.475	0.3125
100,000	0.37	0.245
0 (indicative)	0.30 (as above)	0.20 (as above)

*Market Parcel size

Scaling factors are used to apply a higher weighting to volumes as they approach a market parcel size and vice versa. They are used when the volume is greater than zero but less than market parcel size and are based on linear interpolation between the highest and lowest weightings for each subcategory (e.g. the best bid market parcel weighting and best bid indicative weighting).

2.4 Calculation Methodology (Non-vanilla Fixed Rate Notes and Floating Rate Notes)

The NZ Credit market methodology is sub-categorised into two sections:

Outlier Checks: For each security, an average of all included Price-makers' bid yields and all included Price-makers' offer yields quoted on ALLQ is calculated. Once an average of all bid yields and all offer yields has been determined, the standard deviation is calculated to determine if any outliers are required to be excluded (Refer to 3. & 4. below). This is to ensure that some outlier quotations do not have a biased influence on the calculation process.

Application of Weightings: Following any exclusions of other quotations, various weightings are applied to the remaining quotations with higher weightings applied to those that are more aggressive and comply with pre-determined minimum parcels sizes (and vice versa). These weightings are designed to ensure that quotations which are more aggressive and/or quoted in a market parcel size have a greater degree of influence on the Closing Rate. For example, a bid yield that is in a market parcel size that is lower than the other quoted bid yields in a non-market parcel size will receive a higher weighting than those other bid yields.

A step-by-step calculation process is outlined below:

1. Data is obtained in accordance with sections 2.1 & 2.2 above.
2. For each security:
   a) Take average of:
      (i) all available Price-maker bid quotations; and
      (ii) all available Price-maker offer quotations.
3. For bid quotations, remove:
   a) any quotation one or more than one standard deviation **lower than** the average unless the quotation is the only one for a market parcel size **and/or**;
   b) any non-market parcel size quotation one or more than one standard deviation **higher than** the average quotation.
4. For offer quotations, remove:
   a) any quotation one or more than one standard deviation **higher than** the average unless the quotation is the only one for a market parcel size **and/or;**
   b) any non-market parcel size quotation one or more than one standard deviation **lower than** the average quotation.
5. Following the exclusion process, a weighted average methodology is applied to the remaining quotations. Each remaining quotation is sub-categorised into a different quotation type and then assigned a pre-determined weighting:
   Best bid/offer market parcel size: Highest bid price or lowest offer price amongst quotations in at least the specified market parcel size (volume). (Refer to Table 1 above for market parcel sizes). May not be the highest bid price or lowest offer price overall, if more aggressive prices are in less than a market parcel size. This is considered the most

robust type of quotation and hence receives the highest weighting.

Other bid/offer market parcel size: Market parcel size that meets minimum criteria however the price is not the highest bid price or lowest offer price.

Best bid/ offer indicative: Highest bid price or lowest offer price **not** in a minimum market parcel size. Must be the highest bid price or lowest offer price overall.

Other bid/offer indicative: not the highest bid or lowest offer **and not** in minimum market parcel size. This is considered the weakest type of price given its indicative nature and associated volume and hence receives the lowest weighting.

Excluded: Quotations that are excluded via the standard deviation process are automatically assigned a zero weighting. These are considered outliers and are not used in the calculation process given the potential to adversely impact the Closing Rate for the respective security.
Refer to Table 2 for the pre-determined weightings.

6. A scaling factor is then used to determine the weighting applied to bids and offers that are less than the market parcel size but greater than zero volume. Follow the steps to calculate:
   c) Is the quotation volume less than market parcel size or greater than zero? If yes – scaling factor to be applied.
   d) Is the quotation the best bid or best offer?
      (i) Yes – take the weightings for best bid/offer market parcel size (1.0) and the best bid/offer indicative (zero volume) (0.30). The scaling factor is calculated by interpolating between these weightings – based on volume attached to the quotation.
      (ii) No – take the weightings for other bid/offer market parcel size (0.65) and other bid/offer indicative (zero volume) (0.20). The scaling factor is calculated by interpolating between these weightings – based on volume attached to the quotation.
      (iii) No additional weightings are to be applied to quotations where volumes are greater than the pre-determined market parcel.
      (iv) See Table 3 above for examples.

7. Following the allocation of the weightings to each quotation (bid or offer), the weighted average bid/offer is derived by summing:
   Each bid/offer price * (Applied Wtg / Σ All Bid/Offer weightings).

8. The Closing Rate for each security is determined by:
   (Weighted average bid price + Weighted average offer price) / 2.

9. Closing non-vanilla fixed rate notes and FRN prices are rounded to three decimal places and rounded to the nearest half basis point.

10. No quorum of Price-makers is required. If the Closing Rate is calculated using two or less quotations, it is marked with an *.

11. If there is no updated bid and/or offer data quotations from all the Price-makers simultaneously, Section 2.6 below sets out for the Contingency Procedures which will operate.

2.5 Calculation Scenarios (Vanilla fixed rate bonds)

PCS	Bid Yld	Ask Yld	BSz (M)	ASz (M)
ANZI	3.193	3.093	1000000	1000000
BNZ	3.192	3.082	500000	0
CBAA	3.161	3.081	5000000	5000000
WPAC	3.191	3.111	1000000	0

Section 1

Mean bid:	3.18425
Std Dev bid:	0.0155

Maximum bid limit:	3.1998
Minimum bid limit:	3.1687

CBAA bid quote is not excluded despite it falling outside of one standard deviation because it is a (above minimum) market parcel size and is lower in yield than the minimum bid limit (i.e. more aggressive). All bid quotes are therefore included in weighted average calculations (section 2).

Mean offer:	3.09175
Std Dev offer:	0.0139
Maximum offer limit:	3.1057
Minimum offer limit:	3.0778

WPAC offer quote is excluded (assigned a zero weighting) because it falls outside one standard deviation of the mean (despite it being the most aggressive offer, it is not a market parcel size, hence exclusion). ANZI, BNZ & CBAA offer quotes are included in weighted average calculations (see below).

Section 2

Weightings assigned as follows.

PCS	Wtg.	Bid Yld	Ask Yld	Wtg.	BSz (M)	ASz (M)
ANZI	0.65	3.193	3.093	1.0	1000000	1000000
BNZ	0.425	3.192	3.082	0.20	500000	0
CBAA	1.0	3.161	3.081	0.65	5000000	5000000
WPAC	0.65	3.191	3.111	0.00	1000000	0
Σ	2.725			1.85		

Note – scaling factor applied to BNZ bid quotation.

Weighted average yield calculations:

Wtg_x = Bid yield * (Wtg / Σ All Bid weightings) e.g. ANZI Wtg_x = 3.193 x (0.65/2.725) = 0.7616

PCS	Wtg_x.	Bid Yld	Ask Yld	Wtg_y.	BSz (M)	ASz (M)
ANZI	0.7616	3.193	3.093	1.6719	1000000	1000000
BNZ	0.4978	3.192	3.082	0.3332	500000	0
CBAA	1.1600	3.161	3.081	1.0825	5000000	5000000
WPAC	0.7612	3.191	3.111	0.0000	1000000	0
Σ	3.18			3.0876		

Weighted Average bid = Σ of all the Wtg_x i.e. 3.18

Weighted Average offer = Σ of all the Wtg_y i.e. 3.0876

Closing yield = (3.18 + 3.0876)/2 = 3.1338 = 3.1350 (rounded to 4 decimal places and nearest quarter basis point)

Calculation Scenarios (Non-vanilla fixed rate bonds and Floating Rate Notes)

PCS	Bid Px	Ask Px	BSz (M)	ASz (M)
ANZI	99.661	99.785	1000000	10000
BNZ	99.71	99.772	1000000	10000
CBAA	99.748	99.847	5000000	5000000
WPAC	99.673	99.772	1000000	0

Section 1

Mean bid:	99.698
Std Dev bid:	0.0393
Minimum bid limit:	99.6587
Maximum bid limit:	99.7373

CBAA bid quote is not excluded despite it being outside one standard deviation because it is a (above minimum) market

parcel size and is higher in price than the maximum bid limit (i.e. more aggressive). All bid quotes are therefore included in weighted average calculations (section 2).

Mean offer:	99.794
Std Dev offer:	0.0359
Minimum offer limit:	99.7581
Maximum offer limit:	99.8299

CBAA offer quote is not excluded despite it being outside one standard deviation because it is a market parcel size (above minimum) and is lower in price than the minimum bid limit (i.e. more aggressive). The quote is also the only offer in a market parcel size. All offer quotes are therefore included in weighted average calculations.

Section 2

Weightings assigned as follows.

PCS	Wtg.	Bid Px	Ask Px	Wtg.	BSz (M)	ASz (M)
ANZI	0.65	99.661	99.785	0.2045	1000000	10000
BNZ	0.65	99.71	99.772	0.3070	1000000	10000
CBAA	1	99.748	99.847	1.0000	5000000	5000000
WPAC	0.65	99.673	99.772	0.3000	1000000	0
Σ	2.95			1.8115		

Note – scaling factor applied to ANZI and BNZ Ask (Offer) quotations given the volume is >0 and <1m.

Weighted average price calculations:
Wtg_x = Bid price * (Wtg / Σ All Bid weightings) e.g. ANZI Wtg_x = 99.661 x (0.65/2.95) = 21.9592

PCS	Wtg_x.	Bid Px	Ask Px	Wtg_y.	BSz (M)	ASz (M)
ANZI	21.9592	99.661	99.785	11.2647	1000000	10000
BNZ	21.9700	99.71	99.772	16.9086	1000000	10000
CBAA	33.8129	99.748	99.847	55.1184	5000000	5000000
WPAC	21.9618	99.673	99.772	16.5231	1000000	0
Σ	99.7039			99.8149		

Weighted Average bid = the sum of all the Wtg_x i.e. 99.7039

Weighted Average offer = the sum of all the Wtg_y i.e. 99.8149

Closing price = (99.7039 + 99.8149)/2 = 99.7594 = 99.7600 (rounded to 4 decimal places and nearest quarter basis point)

2.6 Contingency Procedures

If no Closing Rate data is able to be obtained from Bloomberg at 16:32, the following process replaces the normal process.

16:32 – Final snap attempt. If no data can be accessed from BBG ALLQ source at this time – data taken from the most recent pre-close snap (between 16:15 and 16:30) will be used in the calculation process.

16.35 – If no data is available, the Closing Rate process is automatically extended by sixty minutes. If the issue is technical, emails with a template for manual completion are sent to Price-makers. Once responses have been obtained, this data is then used by the NZFBF to calculate Closes.

NZFBF will also contact Price-makers as a follow up reminder.

17:05 - Email window closes

17:15 – If no contact is made or no Closing Rate data is received directly from Price-makers, the data extracted from a snap taken earlier in the day (14:00) is used in the calculation process.

17:30 – If the data extracted from a snap taken earlier in the day (14:00) is also unavailable – no determination of Closing Rates is completed for the day.

2.7 Publication

The NZNG Closing Rate information will be published in accordance with the following protocol:

- Closing Rates will be displayed in an ascending date of maturity and include an average rate for each security; and,
- Calculated Closing Rates will be disseminated to all participating Information Vendors by no later than 16:55 NZST on the Business Day to which they apply.

The data is distributed to subscribers via:

- An XML feed to the information vendors. Vendors are obligated to display the NZNG Closing Rates on their vendor screens upon immediate receipt of the XML data; and,
- Excel spreadsheet distribution for subscribers to the NZNG Closing Rate service.

2.8 Credit Spread

On the NZNG Closing Rate Bloomberg page (GDCO 34238 1 1), there is a calculated credit spread associated with each security in the NZNG market. This credit spread is calculated and published by Bloomberg for the benefit of benchmark users and is not NZFBF data. This credit spread is the difference in yield between the relevant NZNG security and the corresponding swap rate for that maturity date.

For any queries on the calculation or publication of the credit spread on the NZNG Bloomberg page, please refer to Bloomberg.

2.9 Final Stage Methodology

The Final Stage Methodology defines how NZFBF will seek contributions from Price-makers in the event that the Closing Rates are not available, and the Financial Markets Authority (FMA) instructs the banks to provide expert opinion.

Under the Final Stage Methodology, Closing Rates are defined as representative mid-rates for pre-approved and eligible NZ Credit Market securities that are traded in the local New Zealand market at approximately 4.32pm on any NZ business day. Price-makers must only submit Closing Rates for NZ Credit Market securities that solely reflect the above definition.

Price-makers should develop an internal Submissions Guide, formulated in accordance with the Closing Rate Final Stage Methodology and Code of Conduct when submitting Closing Rates. For clarity, each Price-maker is only required to submit rates that are reflective of their own mid-rates for the eligible NZ Credit Market securities.

Guidance on selection and priority of inputs

Expert judgement involves the use of discretion by a Price-maker when determining the data inputs to be used in rate submissions and adjusting these inputs where necessary to reflect current market conditions. Price-makers must identify a range of data inputs that may be used in determining NZ Credit Market security closing submissions as part of their Submissions Guide. Where possible, expert judgement should be supported by market data. In developing the Submission Guide, Price-makers may have regard to the following:

- Price-maker's genuine business purposes (where applicable in the context of submission); and,
- Trading in NZ Credit Market securities by a Price-maker should be based on its genuine business purposes to buy or sell the securities, as determined by the Price-maker.

Without limiting the matters it may have regard to, and for the avoidance of doubt in determining its genuine business purposes to buy or sell NZ Credit Market securities, a Price-maker may have regard to:

- credit risk limit management when trading NZ Credit Market securities; and,
- price and/or volume discovery.

and extrapolation of values using:

- Transactions in related NZ Credit Market securities markets (local and offshore); and

- Transactions or quotes in local interest rate derivative markets that are independent of NZ Credit Market securities; and,
- Prior or historical NZ Credit Market securities data, accounting for current market conditions. A parallel shift may be applied to the data in order to reflect recent events/activity.

In addition to quantitative elements such as the above, the Submissions Guide should also incorporate the use of qualitative elements (i.e. expert judgement) with sufficient flexibility where quantitative data is limited or unavailable.

In determining the priority of inputs, the below guidance should be observed:

- Transactional based data should be accorded the highest priority with transactional data that meets some or all of the criteria noted in section 2.1;
- Executable quote data should be accorded higher priority than indicative quote data; and,
- The most recent transactions in NZ Credit Market securities should be given higher weighting relative to historical transactions.

2.9 Closing Rate Cessation Procedures

These procedures concern the actions that will be taken by NZFBF, in the event of cessation of a benchmark, in this case Credit Market Closing Rates.

Various factors, including external factors beyond the control of NZFBF, might necessitate material changes to the Closing Rates. Subscribers and stakeholders of the Closing Rate benchmarks should have robust fallback provisions in place in the event of material change or cessation of the Closing Rates. For example, cessation can be invoked by NZFBF if they believe they are no longer in a position to calculate and publish Closing Rates and/or the benchmark is no longer representative.

Other entities within New Zealand can also invoke the cessation of the Closing Rates if they believe NZFBF is not able to calculate and publish Closing Rates and/or the benchmark is no longer representative. For example, The FMA or the Reserve Bank of New Zealand. These procedures do not refer to their actions or procedures.

Prior to cessation notice will be provided to the necessary stakeholders and subscribers that there were issues pertaining to the calculation and publication of the Closing Rates. However, if cessation was to occur NZFBF would notify:

- The NZFBF Board;
- The Financial Markets Authority;
- The Reserve Bank of New Zealand; and,
- Subscribers and other stakeholders of the Closing Rates.

Such notice would include:

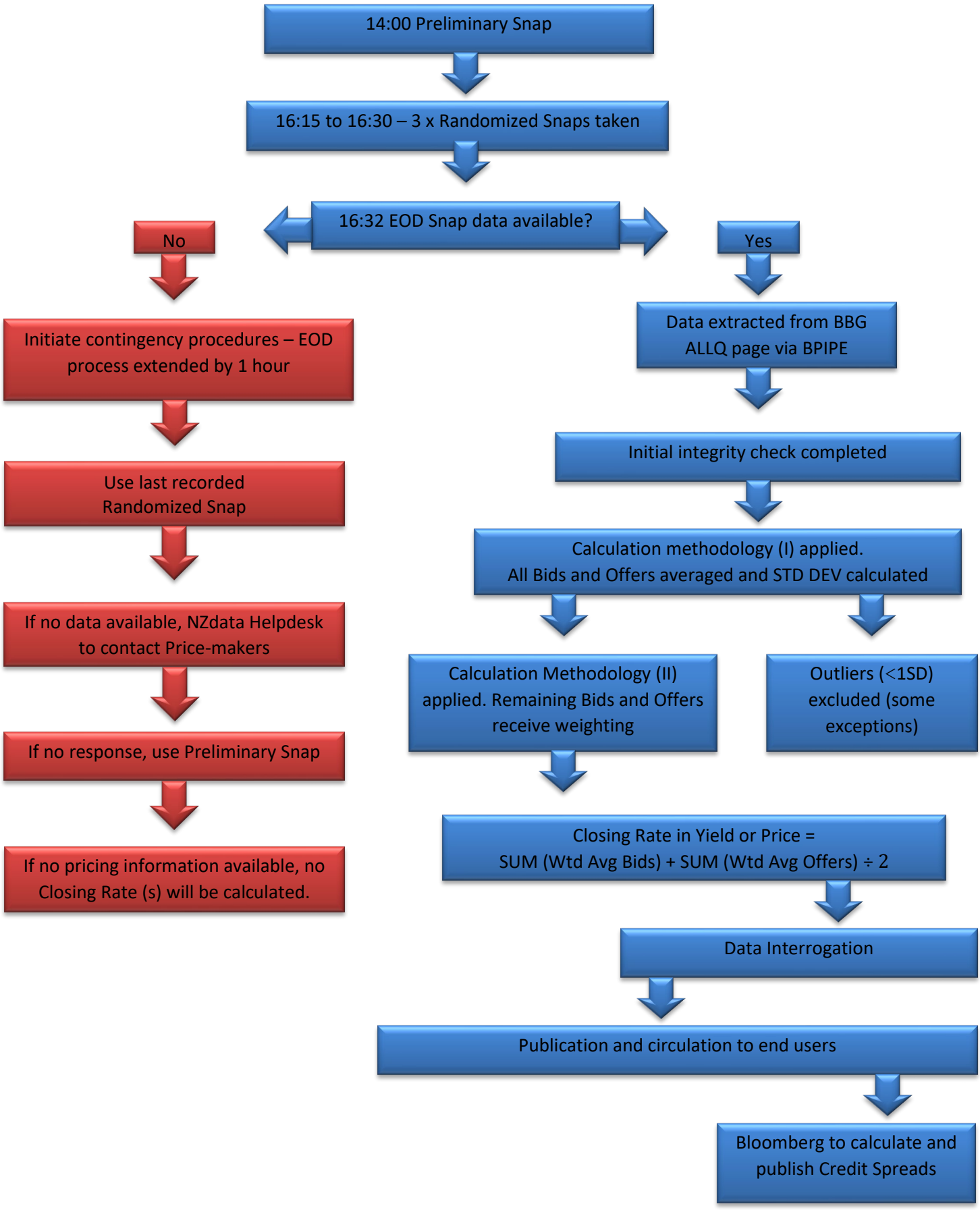
- A description of the issue;
- When cessation would likely occur;
- The potential to use other benchmarks be they a fallback benchmark interest rate or some other benchmark. The time required to implement a new benchmark if one is available;
- NZFBF's ability to continue as the Benchmark Administrator; and,
- Options for an alternate Benchmark Administrator, if NZFBF were unable to continue.

Voluntary discontinuation

If the NZFBF determined it could no longer continue as the Benchmark Administrator, for whatever reason, it would notify the stakeholders noted above. Following this a market notification would be made giving at least six-month's notice.

The NZFBF would work with stakeholders to identify expressions of interest from other administrators in publishing the Closing Rates and the NZFBF would be prepared to work with the successful administrator to transition the benchmark.

3.0 NZFBF CLOSING RATES – DECISION TREE



New Zealand Financial Benchmark Facility
Level 12, 171 Featherston Street, P O Box 641, Wellington, New Zealand | T: +64 4 333 1377 | E: helpdesk@nzfbf.co.nz | W: www.nzfbf.co.nz

4.0 APPENDIX I[1]

Key Definitions

Administration: Includes all stages and processes involved in the production and dissemination of a Closing Rate, including:

a) Collecting, analysing and/or processing information or expressions of opinion for the purposes of the determination of a Closing Rate;

b) Determining a Closing Rate through the application of a formula or another method of calculating the information or expressions of opinions provided for that purpose; and

c) Dissemination to users, including any review, adjustment and modification to this process.

ALL Quote (ALLQ): Bloomberg screen that displays bid/offer quotes for securities and derivative instruments. ALLQ can also be used as a liquidity platform where trades can be executed through dealers with whom permission has been given to trade. ALLQ refreshes pricing automatically and displays the time for each pricing update.

Audit trail: For the purposes of the Closing Rate determination process, the documentation and retention of all relevant data, submissions, other information, judgments (including the rationale for any exclusions of data), analyses and identities of Submitters used in the Closing Rate setting process for an appropriate period.

Benchmark: The Benchmarks in scope of this report are prices, estimates, rates, indices or values that are:

a) Made available to users, whether free of charge or for payment;

b) Calculated periodically, entirely or partially by the application of a formula or another method of calculation to, or an assessment of, the value of one or more underlying Interests;

c) Used for reference for purposes that include one or more of the following:
- determining the interest payable, or other sums due, under loan agreements or under other financial contracts or instruments;
- determining the price at which a financial instrument may be bought or sold or traded or redeemed, or the value of a financial instrument; and/or
- measuring the performance of a financial instrument.

Benchmark Administrator ("Administrator"): An entity or legal person that controls the creation and operation of the Closing Rate Administration process, whether or not it owns the intellectual property relating to the Closing Rates. In particular, it has responsibility for all stages of the Closing Rate Administration process, including:

1. The calculation of the Closing Rates;
2. Determining and applying the Closing Rate methodology; and
3. Disseminating the Closing Rates.

Benchmark User: A person or entity that purchases Closing Rate determination services from an Administrator.

Bloomberg: A third party platform that provides a real time source of market data, pricing information and news.

Bona fide: Refers to data where the parties submitting the data have executed, or are prepared to execute, transactions generating such data and the concluded transactions were executed at arm's-length from each other.

BPIPE: BPIPE is the Bloomberg technology that allows users such as the NZFMA to access real time data from Bloomberg ALLQ pages based on predetermined parameters. For instance, the data could be readily obtained in a preferred format, e.g. xml and formatted according to the NZFMA's requirements.

Business Day: A Business Day is defined as a day on which banks in New Zealand are generally open for business (refer NZFMA website for a detailed definition).

[1] *Source: IOSCO Principles for Financial Benchmarks July 2013 and NZFMA internal documents*

Calculation Agent: An entity with delegated responsibility for determining a Closing Rate through the application of a formula or other method of calculating the information or expressions of opinions provided for that purpose, in accordance with the methodology set out by the Administrator.

Closing Rate: An instrument valuation as at the market close on any trading day, the calculation of which has been determined in line with the methodologies specified in these Operating Guidelines & Principles. The Closing Rate is intended to provide an indication of market value and specifically should not be used for settlement purposes. In this way, Closing Rates are distinct from Benchmarks.

Contingency procedure: An alternative to the normal procedure – triggered if an unusual but anticipated situation arises.

Deal-able: Price or quotation that a client can contact a dealer about, and which the dealer has discretion to alter.

Interest: Refers to any physical commodity, currency or other tangible goods, intangibles (such as an equity security, bond, futures contract, swap or option, interest rates, another index, including indexes that track the performance of a rule-based trading strategy or the volatility of a financial instrument or another index), any financial instrument on an Interest, which is intended to be measured by a Closing Rate. Depending on the context, it is assumed that the word "Interest" also includes the market for such Interest.

Market parcel: The minimal notional size of a trade (or bid or offer) for a financial instrument that is accepted by Price-makers as a fair reflection for a standard market transaction.

Material Error: Materiality relates to the seriousness of the error and how this error may impact on what is meant to be represented. Therefore, if an error will see the Closing Rate benchmark to move by more than the material error threshold, this will warrant a re-calculation of rates. For the NZNG market, this material error threshold is 10% of a securities credit spread or 5.00 basis points, whichever is greater.

Methodology: The written rules and procedures according to which information is collected and the Closing Rate is determined.

Non-vanilla bonds and FRNs: A fixed coupon bond is considered non-vanilla if it contains certain features which require assumptions around coupons or maturities to calculate the yield of the bond. These may include, but are not limited to:

- Call options where the maturity date of the bond is not certain;
- Coupon resets;
- Capital or Coupon values linked to inflation or some other index;
- Conversion to equity or other non-standard maturities; and,
- Soft bullet maturities.

A fixed coupon bond that no longer require assumptions around coupons and maturities in order to calculate the yield of the bond may be considered vanilla. Examples include:

- A bond containing a single call date and that has no other non-vanilla features. Once a call notice is issued for that bond, it will be considered vanilla until maturity; and,
- A bond containing a single reset date and that has no other non-vanilla features. Once the reset has been published, it will be considered vanilla until maturity.

The following non-vanilla features would not on their own, result in the bond being considered non-vanilla

- Call options that do not impact the traded maturity date of the bond (even if they may impact the traded credit spread of the bond). Examples include:
    - Calls on a Volume Weighted at Average Price basis; or,
    - Calls relating to credit ratings changes.
- Coupon step ups caused by a downgrade in credit rating; and,
- Non-standard day count conventions, such as ACT/365 basis.

A floating rate note is considered non-vanilla if it contains certain features which require assumptions around interest margins or maturities to calculate the price of the note.

These features may include, but are not limited to

- Call options where the maturity date of the FRN is not certain;
- Capital or interest margin values linked to inflation or some other index;
- Conversion to equity or other non-standard maturities; and,
- Soft bullet maturities.

A floating rate note that no longer require assumptions around coupons and maturities in order to calculate the price of the note may be considered vanilla. Examples include:

- A floating rate note containing a single call date and that has no other non-vanilla features. Once a call notice is issued for that bond, it will be considered vanilla until maturity.

The following non-vanilla features would not on their own, result in the bond being considered non-vanilla

- Call options that do not impact the traded maturity date of the note (even if they may impact the traded credit spread of the bond). Examples include:
    - Calls on a Volume Weighted at Average Price basis; or,
    - Calls relating to credit ratings changes.
- Margin step ups caused by a downgrade in credit rating; and,
- Non-standard day count conventions.

Note there are no FRNs in the NZ market currently considered non-vanilla.

Outliers: Outliers are an internal metric used by NZFBF to identify if a Price-makers rate is significantly different from the other Price-makers in the market. This outlier test is undertaken on data at the 5 snaps between 2:00pm and 4:32pm and will be flagged in the email notifications. The metric for outliers is *One Standard Deviation* from the average bids and offers for that tenor in that market.

Over-the-Counter: Financial instruments that are bought and sold and privately negotiated directly between two counterparties, without the use of an exchange or other intermediary.

Participants: Legal entities involved in the production, structuring, use or trading of financial contracts or financial instruments used to form the Closing Rates, or which reference the Closing Rates.

Price-maker: A financial institution approved by the NZFMA to supply two-way quotations via a third-party platform for the calculation of the NZNG Closing Rates.

Publish or make available: Refers to the expectation that a party such as an Administrator should provide a document or notice to Stakeholders. The means by which such notice is made should be proportionate to the breadth and depth of the Closing Rate used by Stakeholders, as determined by the Administrator on a "best efforts" basis. Ordinarily, posting a document or notice on the Administrator's website will meet this expectation.

Stakeholder: Refers to Subscribers and other persons or entities who own contracts or financial instruments that reference a Closing Rate.

Stale Rates: Stale rates refer to the NZFBF metric used to identify if a Price-makers rates are current and up to date. The stale rate times for Closing Rates are as follows:

- 4:00pm – NZSW, NZGS & NZOS
- 7:30am – NZBO, NZBR, NZRR & NZNG

Stressed market conditions: When a market is exposed to heightened volatility which negatively impacts liquidity and the ability to execute transactions. One of the potential consequences is financial instrument bid / offer spread widening. The maximum bid / offer spread limits set out in this document have been determined by Price-makers as maximum acceptable level for normal market conditions.

Two-way: A price that has a bid price (yield) and an offer price (yield). The bid offer spread is the difference between the bid price and offer price.