

Back-Up SFK Ancillary Service Schedule

1. Glossary and Interpretation

1.1 Glossary:

In this Ancillary Service Schedule, unless the context otherwise requires, the following definitions apply:

Assessment Period

means all the Trading Periods within any continuous period of 30 days for which an FK Site was Dispatched, provided the number of such Trading Periods is at least 24;

Availability Fee Withholding

has the meaning given to that term in clause 7.5;

Constraint Price

has the meaning given to that term in clause 7.2;

Dispatched

means dispatched to provide Frequency Keeping under this Ancillary Service Schedule;

Equipment

means the FK Sites and their Control Equipment;

FK Site

means an FK Site specified in Appendix 2;

Gate Closure Period

means, for an Offer, the "gate closure period" (as defined in the Code) that would apply to the Offer if the Offer were a Reserve Offer and the Ancillary Service Agent were not an Embedded Generator (if it is one);

Monitoring Equipment

means equipment capable of measuring and recording the FK Output of an FK Site and frequency of the Grid; and

Offer

means an offer made by the Ancillary Service Agent to the System Operator in accordance with clause 4 to provide Frequency Keeping during a Trading Period and includes any Offer revised in accordance with clause 4.4, 4.5 or 4.6 but excludes any Offer cancelled in accordance with clause 4.4 or 4.5.

1.2 Interpretation:

In this Ancillary Service Schedule, unless the context otherwise requires:

- (a) references to an End-to-End Test for an FK Site mean an End-to-End Test of all Equipment and Monitoring Equipment relating to the FK Site; and
- (b) references to appendices are references to appendices of this Ancillary Service Schedule.

2. [removed]

3. Provision of Frequency Keeping

3.1 Provision of Frequency Keeping:

The Ancillary Service Agent must provide:

- (a) Frequency Keeping if Dispatched; and
 - (b) Equipment and Monitoring Equipment,
- in accordance with this Contract.

3.2 Back-Up SFK:

(a) Restricted Application:

This Ancillary Service Schedule relates to Back-Up SFK only. All references in this Ancillary Service Schedule to Frequency Keeping are to be interpreted accordingly.

(b) No Offers or Dispatch Outside Back-Up SFK periods:

Despite anything else in this Ancillary Service Schedule, the Ancillary Service Agent must not submit an Offer, and will not be Dispatched, for a Trading Period for an Island that is not during a Back-Up SFK period for the Island.

3.3 Notification:

The System Operator must provide the Ancillary Service Agent with as much notice as reasonably practicable of the commencement or end of any Back-Up SFK period for an Island.

4. Offers

4.1 Contract to Provide Offers:

The Ancillary Service Agent may submit an Offer before the start of the Gate Closure Period for the Offer. Each Offer submitted is valid until revised or cancelled in accordance with this Ancillary Service Schedule. The Ancillary Service Agent acknowledges that the making of an Offer does not oblige the System Operator to issue a Dispatch Instruction in respect of that Offer.

4.2 Form and Content:

Each Offer must be in the form and contain the information set out in Appendix 1. Each Offer must contain at least one but no more than five MW Bands and an Offer Price for each MW Band. If an Offer relates to more than one Trading Period, it will constitute a separate Offer for each of those Trading Periods.

4.3 MW Band, Control Max and Control Min:

The Ancillary Service Agent must ensure that each MW Band in an Offer is such that the Control Max for the relevant FK Site is greater than or equal to the Control Min for the FK Site plus twice the range of the MW Band.

4.4 Changes Before Gate Closure:

The Ancillary Service Agent may:

- (a) revise an Offer by submitting a revised Offer before the start of the Gate Closure Period for the original Offer; and
- (b) cancel an Offer by giving the System Operator notice before the start of the Gate Closure Period for the Offer.

4.5 Bona Fide Physical Reason or Grid Emergency:

Subject to clause 4.6, the Ancillary Service Agent may:

- (a) cancel an Offer during the Gate Closure Period for the Offer;
- (b) submit a revised Offer during the Gate Closure Period for the original Offer; or
- (c) submit a new Offer during the Gate Closure Period for the Offer,

only in circumstances where a Bona Fide Physical Reason necessitates the cancellation or submission or where the System Operator has issued a Formal Notice, but not otherwise. Any dispute as to whether the cancellation or submission was necessitated by a Bona Fide Physical Reason or by a Formal Notice is to be resolved by good faith discussions between the parties. If the dispute is not resolved as a result of such discussions within five Business Days, the dispute is to be resolved by Dispute Resolution.

4.6 Change to Maintain Quantity Offered:

The Ancillary Service Agent may submit a revised Offer during the Gate Closure Period for the original Offer if the purpose and effect of the revision of the Offer is solely to maintain the quantity of Frequency Keeping offered by the Ancillary Service Agent for that Trading Period following a reduction or cancellation of another Offer under clause 4.5.

4.7 Reporting:

If the Ancillary Service Agent cancels an Offer or submits a new or revised Offer under clause 4.5 or 4.6, the Ancillary Service Agent must report the cancellation or submission to the System Operator in writing together with an explanation of the reasons for the cancellation or submission.

4.8 Personnel:

An Offer may be submitted, revised, or cancelled by the personnel specified in Appendix 3. The Ancillary Service Agent must ensure such personnel are trained in accordance with Good Industry Practice and can be contacted by the System Operator at the times and at the telephone and mobile numbers specified in Appendix 3.

4.9 Transmission of Offers and Changes to Offers:

Every Offer, revised Offer and cancellation of Offer must be transmitted to the System Operator through WITS or, if necessary, using the back-up procedures specified by the WITS manager under clause 13.52 of the Code.

4.10 Confirmation:

The System Operator must, as soon as reasonably practicable, confirm to the Ancillary Service Agent the receipt of any Offer, revised Offer or cancellation of an Offer through WITS or, if necessary, using the back-up procedures specified by the WITS manager under clause 13.52 of the Code.

4.11 Suspension of Offers - Performance Standards:

If at any time the System Operator is not satisfied (acting reasonably) that the Ancillary Service Agent can meet the Performance Standards for an FK Site's Equipment or Monitoring Equipment then, if so notified by the System Operator (which notice must outline the areas of concern that the System Operator has), the Ancillary Service Agent must not submit any Offers for the FK Site until and unless it has provided evidence that demonstrates to the reasonable satisfaction of the System Operator that the Ancillary Service Agent can meet the Performance Standards.

4.12 Suspension of Offers - Commissioning and Testing:

The System Operator may, on notice to the Ancillary Service Agent, restrict the quantities of Frequency Keeping the Ancillary Service Agent may offer for Trading Periods during which relevant Equipment or its Monitoring Equipment is being commissioned or tested.

4.13 No Offers Without a Test:

The Ancillary Services Agent must not submit an Offer for an FK Site unless the Ancillary Service Agent has:

- (a) conducted and passed an End-to-End Test of the Equipment at the relevant FK Site, and the test results have been assessed and approved by the System Operator, in the previous six months; or
- (b) demonstrated fully compliant operational performance of the FK Site's Equipment and Monitoring Equipment by providing Back-up Single Frequency Keeping in the previous six months, to the reasonable satisfaction of the System Operator.

4.14 Certain Offers Not Valid

Offers submitted in breach of clause 4.11, 4.12 or 4.13 will be deemed not to be submitted pursuant to a valid and enforceable contract with the System Operator and will not be accepted by the System Operator.

5. Dispatch Instructions

5.1 Dispatch Instructions:

The System Operator must issue Dispatch Instructions to provide Frequency Keeping in advance for the next Trading Period(s). The System Operator must issue Dispatch Instructions to cease to provide Frequency Keeping in advance of the end of the current Trading Period. In both cases the System Operator must use reasonable endeavours to issue the Dispatch Instructions at least five minutes in advance of the start or end of the relevant Trading Period, as the case may be.

5.2 Staff and Facilities Available to Meet Dispatch Instructions:

The Ancillary Service Agent must ensure that appropriate personnel and facilities are available to receive and comply with any Dispatch Instruction to provide Frequency Keeping from an FK Site. The Ancillary Service Agent must ensure that the personnel specified in Appendix 4 (or other personnel who are no less qualified) are trained in accordance with Good Industry Practice and can be contacted by the System Operator at the times and at the telephone and mobile numbers specified in Appendix 4.

5.3 Frequency Keeping Units to Be Connected and Able to Perform Frequency Keeping from the Start of a Dispatched Trading Period:

The Ancillary Service Agent must ensure that prior to the start of a Trading Period for which it has received a Dispatch Instruction to provide Frequency Keeping, the relevant FK Site is connected and able to provide Frequency Keeping from the start of that Trading Period.

5.4 Ancillary Service Agent Unable to Meet Performance Standards:

If for any reason the Ancillary Service Agent reasonably believes it is unable to meet the Performance Standards, including because the Dispatched MW Band is insufficient, the Ancillary Service Agent must advise the System Operator as soon as practicable. If so advised, the System Operator must review its Dispatch Instructions for Frequency Keeping and issue any further Dispatch Instructions it considers necessary or desirable.

5.5 Block Dispatch Groups, Station Dispatch Groups and Groups of Load Sources:

If an FK Site is a Block Dispatch Group, Station Dispatch Group or group of load sources then the Ancillary Service Agent must ensure that during a Trading Period for which it has received a Dispatch Instruction to provide back-up SFK, the single provider frequency keeping performance standards in clause 6 are met at the relevant FK site(s).

6. Performance Standards

6.1 Equipment:

Subject to clauses 6.4 and 8.1, the Ancillary Service Agent must ensure that each FK Site:

- (a) is available at all times during the term of this Ancillary Service Schedule to provide Frequency Keeping;
- (b) when Dispatched:
 - (i) responds to eliminate any Grid Frequency Error and commences the response as fast as practicable but in all cases within 10 seconds of the Grid Frequency Error occurring; and
 - (ii) continuously acts to maintain the frequency of the Grid within the Normal Band and as close as possible to 50 Hz; and
- (c) continuously acts to maintain Frequency Time Error as close as possible to zero,

provided that the Performance Standards in clauses 6.1(b)(ii) and 6.1(c) are reasonable endeavours obligations only.

6.2 Assessment Period Requirements:

Subject to clause 6.4 and without limiting the generality of the Performance Standards in clause 6.1, the Ancillary Service Agent must ensure that:

- (a) each FK Site provides, over all Assessment Periods, an average Response Rate of at least 10 MW per minute when the Grid Frequency Error is greater than or equal to 0.2 Hertz; and
- (b) the standard deviation of the Grid frequency over all Assessment Periods but excluding any frequency samples that are outside the Normal Band, does not exceed 0.06996.

Failure to comply with either of the Performance Standards in this clause 6.2 will be deemed to be failure to comply with that Performance Standard for all Trading Periods in the relevant Assessment Period. Despite clause 10.1(c) of Part A2: General Terms, any failure by the Ancillary Service Agent to comply with the Performance Standard in clause 6.2 **Error! Reference source not found.** will be deemed to be an irremediable material breach of this Contract.

6.3 Monitoring Equipment:

The Ancillary Service Agent must ensure that, when an FK Site is Dispatched, the Monitoring Equipment for that FK Site accurately measures and records in a time-tagged manner:

- (a) FK Output from the FK Site at an agreed location in the Grid at least once every 1 second, each measurement accurate to within plus or minus 2% of the measured value; and
- (b) the Grid frequency at least once every 1 second (or such longer period as the System Operator may determine), each measurement accurate to within 0.01 Hertz.

6.4 Service Limits:

In complying with the Performance Standards in clauses 6.1 and 6.2, FK Sites are not required to produce FK Output outside the limits of the relevant Dispatched MW Band, above the relevant Control Max or below the relevant Control Min.

6.5 Application of Performance Standards to Certain FK Sites:

If an FK Site is a Block Dispatch Group, Station Dispatch Group or group of load sources then:

- (a) for the purposes of clauses 6.1, 6.2 and 6.4 and the definition of Response Rate:
 - (i) the FK Site is to be treated as the specific Frequency Keeping Unit(s) within the FK Site that are allocated to Frequency Keeping for the relevant period; and
 - (ii) the dispatched generation or pre-Dispatch load (as the case may be depending on the type of FK Site) of the FK Site is to be treated as the generation set point or pre-Dispatch load of the specific Frequency Keeping Unit(s) within the FK Site that are allocated to Frequency Keeping for the relevant period; and
- (b) for the purposes of clause 6.3, the FK Site is to be treated as the specific Frequency Keeping Unit(s) within the FK Site that are allocated to Frequency Keeping for the relevant period.

6.6 Data Records:

The Ancillary Service Agent must ensure that the data recorded by the Monitoring Equipment is held by the Ancillary Service Agent for at least 30 Business Days following the end of each calendar month and is provided to the

System Operator within 5 Business Days of a written request from the System Operator.

6.7 Capability Data:

The Ancillary Service Agent must provide the System Operator with such data as the System Operator may reasonably require from time to time to enable the System Operator to model the Ancillary Service Agent's Frequency Keeping capability.

6.8 Review Meetings:

The parties must use reasonable endeavours to meet at least once during the term of this Ancillary Service Schedule to discuss the System Operator's performance in regard to the issuing of Dispatch Instructions for Frequency Keeping and the Ancillary Service Agent's provision of Frequency Keeping against the Performance Standards.

6.9 Assessment Data:

If requested by the Ancillary Service Agent, the System Operator must use reasonable endeavours to provide the Ancillary Service Agent with the data the System Operator has used to assess the Ancillary Service Agent's compliance with the Performance Standard in clause **Error! Reference source not found.** (whether or not such data establishes a failure by the Ancillary Service Agent to meet that Performance Standard).

7. Prices

7.1 Availability and Offer Prices:

Subject to clauses 2 and 3.3(c) of Part A2: General Terms, the System Operator must pay to the Ancillary Service Agent:

- (a) the Availability Fee each month for the term of this Ancillary Service Schedule. For the avoidance of doubt, the Availability Fee is payable even if there are no Back-Up SFK periods during the term of this Ancillary Service Schedule and even if the Ancillary Service Agent is not Dispatched; and
- (b) subject to clauses 7.3 and 7.4, the relevant Offer Price for all Frequency Keeping Dispatched.

7.2 Constraint Price:

Subject to clauses 2 and 3.3(c) of Part A2: General Terms and clause 7.3, in addition to the Availability Fee and Offer Price, the System Operator must pay to the Ancillary Service Agent any Constrained On Amount or Constrained Off Amount attributable to the System Operator under the Code for Frequency Keeping Dispatched (the **Constraint Price**).

7.3 Offer Price and Constraint Price Not Payable:

If an FK Site is Dispatched to provide Frequency Keeping for less than a total of 3 minutes in the relevant Trading Period, the System Operator is not required to pay the Offer Price or the Constraint Price for that Trading Period unless such payment is required to be made under the Code.

7.4 Change in MW Band:

If the System Operator changes a Dispatched MW Band for an FK Site during a Trading Period, the Offer Price payable will be that of the highest priced MW Band Dispatched.

7.5 Availability Fee Withholding:

If clause 3.3(c) of Part A2: General Terms applies to Frequency Keeping under this Ancillary Service Schedule from an FK Site, the amount of the Availability Fee the System Operator will not be liable to pay, or that the Ancillary Service Agent must refund to the System Operator (the **Availability Fee Withholding**), will be calculated as follows:

$$A = \max (B, C)$$

where:

A is the Availability Fee Withholding;

B = $D \times 0.25$;

C = $D \times (E/F)$;

D is the Availability Fee that would be payable by the System Operator over the term of this Ancillary Service Schedule for the FK Site without any adjustment under clause 3.3(c) of Part A2: General Terms or otherwise;

E is the period when the Performance Standard was not met or is unable to be met or Dispatch Instruction(s) were not complied with or are unable to be complied with for the FK Site (all as relevant to the particular application of clause 3.3(c) of Part A2: General Terms); and

F is the term of this Ancillary Service Schedule, expressed in the same units of time as E.

However, the total Availability Fee Withholding for the FK Site over the term of this Ancillary Service Schedule is capped at D.

8. Outages

8.1 Compliance with Performance Standards:

An Outage of an FK site will not be taken into account in assessing the Ancillary Service Agent's compliance with the Performance Standard in clause 6.1(a) (and will be an Allowed Outage) if:

- (a) the Ancillary Service Agent removes the Equipment from service for one of the reasons set out in clause 8.2;
- (b) the Outage is no longer than one month; and
- (c) the Ancillary Service Agent complies with this clause 8 and its other obligations under this Contract in respect of the Outage.

8.2 Allowed Outages:

The Ancillary Service Agent may, at any time and in accordance with this clause 8, remove an FK Site from service if, in the Ancillary Service Agent's reasonable opinion acting in accordance with Good Industry Practice, it is necessary to do so:

- (a) for maintenance of the Equipment;
- (b) to eliminate or mitigate a risk of injury to any person or damage to the Equipment; or
- (c) for a Test of the Equipment.

8.3 Co-ordination of Planned Outage:

Where an Outage that may compromise the Ancillary Service Agent's ability to provide Frequency Keeping in accordance with this Ancillary Service Schedule is planned or anticipated by the Ancillary Service Agent, the Ancillary Service Agent must:

- (a) provide the System Operator with as much advance warning as reasonably practicable of the Outage, its expected start date and its expected duration;
- (b) consult with the System Operator on the timing of the Outage with the intention that the timing of the Outage must ensure that the System Operator can, at all times, comply with its Principal Performance Obligations;
- (c) notify the System Operator as soon as reasonably practicable of any amended programme for the Outage; and
- (d) keep the System Operator's POCP (Planned Outage Coordination Process) system updated to ensure that POCP at all times accurately reflects the details of the Outage.

8.4 Unexpected Outages:

In the event of any unexpected Outage that may compromise the Ancillary Service Agent's ability to provide Frequency Keeping in accordance with this Ancillary Service Schedule, the Ancillary Service Agent must:

- (a) notify the System Operator as soon as practicable following the start of the unexpected Outage of the cause and expected duration of the Outage; and
- (b) use reasonable endeavours to continue to perform its obligations under this Ancillary Service Schedule.

8.5 Termination for Excessive Maintenance:

If, in the System Operator's reasonable opinion, the number or duration of Outages of Equipment for maintenance is such that the Ancillary Service Agent's ability to provide Frequency Keeping in accordance with this Ancillary Service Schedule has been substantially detrimentally affected, the System Operator may, by giving one month's prior notice to the Ancillary Service Agent, terminate this Ancillary Service Schedule.

8.6 Minimise Duration and Frequency of Outages:

The Ancillary Service Agent must use reasonable endeavours to minimise the duration and frequency of any Outages that affect the Ancillary Service Agent's ability to provide Frequency Keeping in accordance with this Ancillary Service Schedule.

9. Tests

9.1 Six Monthly Test

Subject to clause 9.2, the Ancillary Service Agent must conduct an End-to-End Test of Equipment and Monitoring Equipment at least once every six months.

9.2 Six-Monthly Test Not Necessary

The Ancillary Service Agent is not required to conduct an End-to-End Test of Equipment and Monitoring Equipment under clause 9.1 if it has demonstrated fully compliant operational performance of the Equipment and Monitoring Equipment by providing and monitoring Frequency Keeping in the previous six months, to the reasonable satisfaction of the System Operator.

9.3 Test After Failure:

If:

- (a) the Ancillary Service Agent fails to meet a Performance Standard or comply with a Dispatch Instruction under this Ancillary Service Schedule for any Trading Period; and
- (b) the System Operator requests a Test of the relevant Equipment or Monitoring Equipment within 20 Business Days of becoming aware of the failure by the Ancillary Service Agent,

then, despite clause 4.5 of Part A2: General Terms, the Ancillary Service Agent must meet the costs incurred by the Ancillary Service Agent in conducting the Test regardless of whether or not the results from the Test show that the Ancillary Service Agent is able to meet the relevant Performance Standards.

9.4 Test After Changes to Equipment:

The Ancillary Service Agent must conduct an End-to-End test of the Equipment it uses to provide back-up SFK following any change to the Equipment that may impact its Frequency Keeping performance. The Ancillary Service Agent must promptly (and in any event within 10 Business Days) notify the System Operator if the Ancillary Service Agent intends to make, or has made, a change to the Equipment that may impact its Frequency Keeping performance, regardless of whether the Ancillary Service Agent believes that such impact is of high consequence or likelihood.

9.5 Test Requirements – Equipment:

A Test of Equipment must verify whether or not the Equipment can meet the Performance Standards in clauses 6.1 and 6.2, or such lesser standards as the System Operator may determine in consultation with the Ancillary Service Agent.

9.6 Test Requirements – Monitoring Equipment:

A Test of Monitoring Equipment must verify whether or not the Monitoring Equipment can meet the Performance Standards in clause 6.3.

9.7 Provision of Data for Compliance:

Within 15 Business Days of completing a Test, the Ancillary Service Agent must provide the System Operator with the corresponding Test data and verification of meeting the relevant Performance Standards.

9.8 Breach of this clause 9

If the System Operator believes the Ancillary Service Agent has not complied with this clause 9, the System Operator may make a claim under clause 3.3 of Part A2: General Terms as if the Ancillary Service Agent had failed to meet a Performance Standard.

10. Limitation of Liability

10.1 Limitation of Liability:

If there is a default by either party of any obligation under this Ancillary Service Schedule (other than non-payment of any amounts due), that party and any Associated Person of that party will only be liable to the other party up to a combined maximum liability for any single event or related series of events of [\$] [\$ figure will be the lesser of 5% of the total amount of the expected annual fees payable under this Ancillary Service Schedule or \$100,000] with a combined maximum liability in any 12 month period of [\$] [\$ figure will be the lesser of 20% of the total amount of the expected annual fees payable under this Ancillary Service Schedule or \$300,000], irrespective of the number of events.

10.2 Suspension of Liability:

The Ancillary Service Agent will have no liability to the System Operator in respect of the Ancillary Service Agent's obligations under this Ancillary Service Schedule to be performed during any period the System Operator is in default under this Contract in relation to Frequency Keeping.

Appendix 1 - Form of Offer

Field	Format	Notes
FK Site ID	CHARACTER (3)	A unique code for the FK Site offered to provide Frequency Keeping
Trader ID	CHARACTER (4)	A unique code for trader who will be contracted by the offer
Trading Date	DATE	Date for which the bid is applicable DD/MM/YY or DD/MM/YYYY. The latter format is recommended.
Period	NUMBER (2)	1 to 48 (46 or 50 for day light saving)
Control Min	Number (8,3)	The minimum FK Output of the FK Site whilst still able to keep the frequency
Control Max	Number (8,3)	The maximum FK Output of the FK Site whilst still able to keep the frequency
Band 1 price	Number (8,2)	NZ dollars
Band 1 power	Number (10,3)	MW
Band 2 price	Number (8,2)	NZ dollars
Band 2 power	Number (10,3)	MW
Band 3 price	Number (8,2)	NZ dollars
Band 3 power	Number (10,3)	MW
Band 4 price	Number (8,2)	NZ dollars
Band 4 power	Number (10,3)	MW
Band 5 price	Number (8,2)	NZ dollars
Band 5 power	Number (10,3)	MW

Example of CSV File:

HLY,AUCK,14/08/1999,12,10,200,14.05,50,13.75,70,0,0,0,0,0

HLY,AUCK,14/08/1999,13,10,200,14.05,50,13.75,70,0,0,0,0,0

Appendix 2 – Capability

FK Site	Control Min (MW)	Control Max (MW)	Availability Fee per month

Appendix 3 – Contact Details of Personnel Entitled to Submit, Revise and Cancel Offers

FK Site	Name and Designation	Hours Available	Telephone Number	Mobile Number

Appendix 4 – Contact Details of Personnel Capable of Carrying Out Dispatch Instructions

FK Site	Name and Designation	Hours Available	Telephone Number	Mobile Number