



Critical Contingency Management Plan

Prepared in accordance with the
Gas Governance (Critical Contingency Management) Regulations 2008

First Gas Limited
February 2017



Version Control

This document is uncontrolled

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Approval

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1. Introduction

1.1. Purpose

This Critical Contingency Management Plan (**CCMP**) has been prepared by First Gas Limited (**First Gas**) in compliance with its obligations as a Transmission System Owner (**TSO**) under the Gas Governance (Critical Contingency Management) Regulations 2008 and amendments (the **Regulations**).

The stated purpose of the Regulations is “to achieve the effective management of critical gas outages and other security of supply contingencies without compromising long-term security of supply”¹.

1.2. Scope

The content to be included in a CCMP is specified in Regulation 25 and comprises:

- (a) Thresholds that will be used by the Critical Contingency Operator (CCO) to determine whether a Critical Contingency should be declared;
- (b) A description of the events which First Gas considers may result in a breach of the thresholds;
- (c) Actions that First Gas could take to remedy a breach of the thresholds;
- (d) A process based on Schedule 2 of the Regulations outlining the manner in which curtailment and restoration arrangements will be implemented during a Critical Contingency;
- (e) A communications plan which includes a description of the types, mode, and timing of communications initiated and received by First Gas before and during a Critical Contingency;
- (f) Contact details of suitably qualified personnel at First Gas who will be responsible for receiving communications from the CCO and giving directions in accordance with the CCMP;
- (g) A description of the circumstances under, and reasons why, First Gas considers it may be desirable for the CCO to restore supply to the transmission system in an order different from that described in the curtailment arrangements specified in the Regulations;
- (h) A process based on Regulations 73 to 82 outlining the manner in which Critical Contingency imbalances will be calculated for each affected party;
- (i) A list of contact details for the parties specified in Regulation 25(1)(i);
- (j) A description of how transmission system information referred to in Regulation 38 will be provided by First Gas to the CCO; and
- (k) Any other items appropriate to give effect to the purpose of the Regulations.

1.3. Relationship with Transmission System Codes

This CCMP must be consistent with all applicable Transmission Codes. This currently includes Vector Transmission Code (VTC) and the Maui Pipeline Operating Code (MPOC).²

The VTC and MPOC must be read subject to the Regulations and if any obligation or liability in respect of the same matter is provided for in both the VTC and/or MPOC and the Regulations then to the extent there is any inconsistency the Regulations prevail.³

A payment under the Regulations in relation to a Contingency Imbalance discharges any payment obligation in respect of the same Contingency Imbalance in the VTC or MPOC.⁴

¹ Regulation 3

² Regulation 25(2) – we have kept reference to the “Vector” Transmission Code (VTC) to avoid confusion until such time as a single Transmission System Code is developed and implemented.

³ Regulation 13

⁴ Regulation 81

1.4. Roles During a Critical Contingency

The roles of the CCO and First Gas during a critical contingency are described in the Regulations. First Gas as a TSO during a critical contingency is required to “comply with the directions of the CCO”, and based on those directions, First Gas must “issue directions to Retailers and Large Consumers” in accordance with the Regulations, and in a manner consistent with this CCMP and the communications plan contained within.⁵

1.5. Terminology

All capitalised terms in this CCMP have the same meaning as those terms in the Regulations.

As a result of there being a single TSO (First Gas) but two Transmission System Codes currently in force (VTC and MPOC), there will be occasions within this CCMP where the “Maui Pipeline” will be distinguished from the “Non-Maui” parts of the Transmission System.

2. Pre-Critical Contingency

2.1. Potential Critical Contingency

The VTC and MPOC set out First Gas’s rights and obligations as TSO ahead of, and to some extent during, a Critical Contingency.

If First Gas suspects that an Emergency as defined in the VTC will occur (and a curtailment or shutdown is necessary) it will give notice to Shippers, as early as reasonably practicable prior to such curtailment or shutdown, of First Gas’s intention to take such action.⁶

If First Gas suspects that an Emergency, Contingency Event, Force Majeure Event, Pipeline Contingency Event, Pipeline Emergency (all as defined in the MPOC), or an interruption under Section 15 of the MPOC could result in a critical contingency on the Maui Pipeline, then it will use its reasonable endeavours to notify affected Shippers and Welded Parties as early as reasonably practicable.

If it is likely that any of the Transmission System Code events referred to in this section may result in a breach of a critical contingency pressure threshold for any part of the Transmission System then First Gas will inform the CCO in accordance with the CCO Communication Plan and section 3 of this CCMP.

When a potential Critical Contingency has been resolved First Gas will inform the CCO in accordance with the CCO Communication Plan and section 3 of this CCMP.

2.2. Events that may cause threshold breaches and remedy actions

The following are events First Gas considers may feasibly result in a breach of a Critical Contingency threshold⁷:

- Loss or reduction of supply from a gas producer or interconnected pipeline;
- Loss or reduction in compression capacity;
- Pipeline defect causing temporary de-rating of pipeline;
- Pipeline defect or damage causing loss of containment;
- Main line valve malfunction causing isolation of downstream pipeline;
- Imbalance in nominated gas quantities;
- A failure by an interconnected party to respond to an operational flow order.
- A delivery point taking more than the quantity of gas that it is contractually entitled to under the transmission system codes;

⁵ Regulation 54(a) and 54(b)(ii)

⁶ VTC section 10.1(h)

⁷ Reg 25(1)(b). Information relating to Critical Contingency thresholds is provided in Section 5

- Interruption to supply due to operational issues (e.g, stuck PIG);
- Sabotage

Prior to any breach of a Critical Contingency threshold, each of these events will be dealt with in accordance with the respective transmission system codes. Accordingly remedial actions may include, where practicable, increasing the volume of gas taken from other injecting or interconnected parties (including through tendering for gas injection), maximising throughput through other compressors, calling on interruptible contracts, operational flow orders, curtailments and shutdowns.

The introduction of off-specification gas or loss/reduction in odorant injection are considered to be credible system threats. However, it is unlikely that either of these events would give rise to a critical contingency threshold breach. First Gas employs a number of controls and monitoring procedures to protect against these types of events occurring and has plans and equipment available to deal with such events.

First Gas has comprehensive emergency response plans, which are activated by a variety of scenarios including physical damage or limitations to the system and unplanned supply interruptions. First Gas operates a 24/7 Gas Operations Control Centre (**GOCC**) which is also used as an emergency control centre when emergency response plans are activated. Emergency response capability is tested and evaluated by either a trial exercise or training exercise on a regular basis.

If a Critical Contingency is declared by the CCO these remedial actions may continue to be taken, if appropriate, in combination with load curtailment instructions from the CCO.

Note that the applicable critical contingency thresholds required under r25 (1) (a) are described further in Section 5.2.

3. Communications Plan

3.1. Purpose and objective

The purpose of this communications plan is to describe the notices that First Gas as TSO will issue to affected parties during a Critical Contingency event, the reciprocal communications and the timeframes under which those communications will take place.

This plan also contains the contact details for pipeline stakeholders who might be involved in a Critical Contingency event as well as the contact details of the First Gas representative who will be responsible for communicating to the CCO.

The overriding objective of the plan is to meet the requirements of Regulations 25(1)(e), (f), (i), (j).

3.2. Target audience

The target audience for communications under the CCMP is defined in Regulations 25(e) and (i) and includes the following:

- Critical Contingency Operator
- Gas distributors
- Shippers
- Welded Parties
- Retailers
- Large Consumers
- Operators of gas storage facilities
- Operators of upstream gas production facilities
- Interconnected parties, retailers, and shippers who are trading across or utilising the relevant part of the transmission system

The operational contact details for these groups are contained in OATIS. OATIS stores contact details by contact group and party. Members of the target audience who are regular users of OATIS (e.g. shippers, Maui pipeline interconnected parties etc.) have separate OATIS contact groups from those who do not use OATIS regularly (e.g. gas distributors, retailers etc.). This enables First Gas to send notifications (via SMS and e-mail) to each relevant OATIS contact group when necessary.

Parties that have access to OATIS have the responsibility for ensuring that their contact details in OATIS are current. Reminders for these parties to check and confirm, or advise of changes to, their contact details in OATIS will be sent by email on a monthly basis.

For parties that do not have access to OATIS and any changes not caught by the monthly check by parties with OATIS access, First Gas will check/update all contact details every six months or at other times considered appropriate by First Gas.

First Gas must nominate a person who will be responsible for giving communications to the CCO under the CCO Critical Contingency Communications Plan.⁸ The details for this person are provided in Appendix 6.

First Gas must also nominate a person who will be responsible for giving directions in accordance with the CCMP.⁹ First Gas nominates the Gas Transmission Duty Manager, or such other persons nominated and authorised by First Gas from time to time to issue directions on behalf of First Gas.¹⁰

Contact details for the Gas Transmission Duty Manager are provided in Appendix 6.

⁸ Regulation 25(1)(f)(i)

⁹ Regulation 25(1)(f)(ii)

¹⁰ Other such persons may include the Control Room Manager, Gas Controller, Duty Scheduler, Senior Management and communications personnel.

3.3. Communication of notices

3.3.1. Normal method for issuing Notices

Notices from the CCO to First Gas will be issued in accordance with the CCO Communications Plan. The CCO will use reasonable endeavours to consult First Gas before issuing notices.

First Gas will use reasonable endeavours to ensure all notices First Gas is required to issue will be posted on OATIS as critical notices within 30 minutes of receiving them from the CCO. Notification alerting affected parties of posted notices will be sent direct from OATIS using email and SMS text messages. Notices may be issued in this manner at any time 24/7 and parties expected to act on notices need to be able to receive and act on such notices in a timely manner.

In the interest of timely notification, First Gas elects to create a PDF of the notice issued by the CCO and attaches it to the published OATIS notice.

Notices are classified as either urgent or ordinary. According to the circumstances urgent notices¹¹ will either be given in writing or will be given orally by telephone¹² and confirmed in writing. Written confirmation will be sent by electronic transmission as described in regulation 21(1)(d) or (e). Ordinary notices will be sent by electronic transmission¹³. First Gas uses the operational contact details contained in the 'Contact Details' screen of OATIS which includes the 'Operational Contact', 'Email Address', 'SMS' and 'Telephone Number' fields for the purpose of communicating notices.

Should it not be possible for an affected party to be set up in OATIS to view notices and/or receive notice alerts from OATIS, alternative systems for transmitting email and SMS text messages will be considered.

All notices posted on OATIS will be available in the public domain.

Notices will be issued using the proforma templates set out in the CCO Communications Plan, which are reproduced in Appendix 5.

3.3.2. Alternative methods for issuing Notices

If the notice functionality on OATIS is unavailable, First Gas will use standard PC applications to communicate written notices as soon as reasonably practicable.

If the communication of notice alerts by SMS text message and email is unavailable via OATIS, First Gas will utilise alternative SMS text messaging and email communication using standard PC applications.

In the event that standard PC applications are unavailable to First Gas, First Gas will communicate notices by telephone and provide written confirmation as soon as reasonably practicable afterwards. If land line and cell phone services are unavailable to First Gas, First Gas will use its satellite phone service to communicate notices by telephone.

3.3.3. General Critical Contingency Notice Conditions

Notices will be considered received by the recipient on the date and at the time they are first posted on OATIS.

All notices issued are pursuant to the arrangements contained in this section 3 – Communications Plan of the First Gas CCMP.

3.4. Communication of Potential Critical Contingency

If the CCO issues a Notice of Potential Critical Contingency or a Notice of Termination of Potential Critical Contingency to First Gas, First Gas will communicate the Notice to all the parties listed in Appendix 4 in accordance with the process described in section 3.3.

¹¹ Communication of Urgent notices is described in regulation 23

¹² An "urgent notice may be given orally where the person issuing a notice considers that the urgency of the situation means the notice should not be given in writing.

¹³ Communication of Ordinary notices is described in regulation 21 (1) (d,e).

3.4.1. Notice of Potential Critical Contingency

The purpose of this notice is to advise that the CCO has determined that a potential Critical Contingency situation exists. The notice will give details of the areas of the transmission system that are affected.

3.4.2. Notice of termination of potential Critical Contingency

The purpose of this notice is to advise that the CCO has determined that a potential Critical Contingency situation has been terminated.

3.5. Communications on Declaration of Critical Contingency

When the CCO issues a Notice of Declaration of Critical Contingency to First Gas in accordance with Regulation 49, First Gas will communicate the notice to all the parties listed in Appendix 4 in accordance with the process described in section 3.3.

3.5.1. Notice of Declaration of Critical Contingency

The purpose of this notice is to advise that the CCO has declared a Critical Contingency. The notice will give details of the areas of the transmission system that are affected and advise that CCO and TSO directions must be complied with.

The notice will also state whether the Critical Contingency is a Regional Critical Contingency as determined by the CCO in accordance with Regulation 52A(1) and (2), or whether that determination has not yet been made.

A process flow chart is included in Appendix 1 illustrating the process for communications during a Critical Contingency declaration.

3.6. Communications during a Critical Contingency

This section describes the notices that may be issued during a Critical Contingency. A process flow chart is included in Appendix 2 illustrating the process for communications during a Critical Contingency.

When the CCO issues notices to First Gas in accordance with Regulation 53, First Gas will communicate the notice to all the parties listed in Appendix 4 in accordance with the process described in section 3.3.

All notices will be sent to all parties listed in Appendix 4 regardless of whether or not they may be affected by a Critical Contingency. It will be the responsibility of these parties to determine what actions they may need to take as result of receiving a notice.

If First Gas deems that complying with any direction issued by the CCO would unreasonably endanger the life or safety of any person it will give urgent notice to the CCO and any other affected parties by telephone and confirm the details in writing as outlined in section 5.1.

If at any time during or after a Critical Contingency First Gas becomes aware of, or obtains information pertaining to, the non-compliance with directives to curtail demand, revise demand curtailment or restore demand, it will inform the CCO in writing.

3.6.1. Notice of Direction to Curtail Demand

The purpose of this notice is to give directions in accordance with the directive issued by the CCO to curtail demand to stabilise the affected parts of the transmission system. The directive will be in accordance with the curtailment bands described in Section 5.4. The notice may contain directions to curtail subsets of demand within a curtailment band or subsets of geographically located demand within a curtailment band.

In accordance with Regulations 55(2) and 56(3), Retailers and Large Consumers are to provide regular compliance updates to First Gas. These should be provided by email to First Gas at intervals advised by First Gas when issuing the directive from the time the first direction to curtail demand is issued. Compliance updates should be provided using the template posted on OATIS. First Gas will provide these updates to the CCO.

In accordance with Regulation 54A, if any part of First Gas's transmission system has failed or been damaged, and that failure or damage has contributed to the critical contingency, it will publish the information required in Schedule 5 of the Regulations after a curtailment direction in respect of band 3 or above. If it is required to publish information in accordance with Regulation 54A, it will update that information regularly.

3.6.2. Notice of Direction to Revise Demand Curtailment Communication

The purpose of this notice is to give directions in accordance with the directive issued by the CCO to revise demand curtailment for the purpose of further stabilising the transmission system. The directive will be in accordance with the curtailment bands described in section 5.4. The notice may contain directions to curtail subsets of demand within a curtailment band or subsets of geographically located demand within a curtailment band.

For the avoidance of doubt the most recently issued notice applies and will include all demand previously directed for curtailment and all additional demands that require curtailment.

In accordance with Regulations 55(2) and 56(3), Retailers and Large Consumers are to provide regular compliance updates to First Gas as TSO. These should be provided by email to First Gas at intervals advised by First Gas when issuing the directive from the time the first direction to curtail demand is issued. Compliance updates should be provided using the template posted on OATIS. First Gas will provide these updates to the CCO.

3.6.3. Notice of Direction to Restore Demand

The purpose of this notice is to give directions in accordance with the directive issued by the CCO. The CCO will have determined that the transmission system has stabilised to the extent that demand can be restored. Demand restoration will normally occur in the reverse order in which it was curtailed. However, the notice may contain directions to restore demand in an alternative order. The notice may also contain directions to restore demand in accordance with the requirements of the Civil Defence Emergency Management Act 2002 (**CDEMA**).

For the avoidance of doubt, the most recently issued notice applies and will include all demand previously directed for restoration and any additional demands that can now be restored.

3.6.4. Notice of Direction to TSO to undertake Reconfiguration

The CCO may consult with the TSO as to whether reconfiguration of the transmission system is feasible and would contribute to achieving the purpose of the Regulations. The CCO may then issue a notice to the TSO directing the TSO to undertake that reconfiguration.

3.7. Communications at the termination of a Critical Contingency

When the CCO issues a Notice of Termination of Critical Contingency to First Gas in accordance with Regulation 61, First Gas will communicate the notice to all the parties listed in Appendix 4 in accordance with the process described in section 3.3.

3.7.1. Notice of Termination of Critical Contingency

The purpose of this notice is to advise that the CCO has determined that the Critical Contingency has been terminated. The notice will contain details on the time and date that the Critical Contingency terminated.

A process flow chart is included in Appendix 3 illustrating the process for communications during a Critical Contingency termination.

3.8. Communication with CCO

First Gas will communicate with the CCO as set out in the CCO Communications Plan either in person, by telephone, and where written communications are required, by use of email using standard PC applications.

Where written communications are required and if standard PC applications are unavailable to First Gas as TSO, First Gas will communicate with the CCO by telephone and provide written confirmation by email as soon as reasonably practicable afterwards, or First Gas may elect to hand deliver written communications.

If land line and cell phone services are unavailable to First Gas, First Gas will use its satellite phone service to communicate by telephone or use in person communications if possible.

First Gas has given permission for the CCO to respond to the First Gas Control Room in order to manage a critical contingency event from that location if the circumstances suit. The benefits from both the TSO and CCO working from the same location include:

- CCO being able to view real-time SCADA screens to monitor system conditions;

- Face to face communications between CCO and TSO minimising and potential delays and reducing the risk of miscommunication;
- Reducing the time delays associated with the SCADA Data Transfer process.

3.9. Communication with Retailers and Large Consumers

As noted in the sections above, Retailers and Large Consumers are to provide regular compliance updates to First Gas at the intervals specified on the relevant critical contingency notices. Compliance updates should be provided using the template posted on OATIS. In the interest of efficiency and avoiding duplication of processes, First Gas have developed a standard, combined Retailer and Large Consumer update template to be sent to the First Gas email addresses listed on the update template. Large Consumer representatives will populate the “Large Consumers” tab of the template, and Retailer representatives will populate the “Retailers” tab of the template. Retailers and Large Consumers are encouraged to familiarise themselves with the update template and the important notes contained in it regarding its use.

The timely provision of accurately populated compliance updates is essential during any critical contingency event. The CCO uses this information, in conjunction with other information and analysis made available by the TSO, to assess the stability of the transmission system and better inform CCO decision-making during the critical contingency. Accordingly, First Gas requests that Retailers and Large Consumers ensure that their processes for notifying consumers as well as sourcing and providing compliance information are maintained and understood by all relevant staff. First Gas understands that such information and processes will be recorded by Retailers in the detailed “Retailer Curtailment Plans” required by section 43 of the Regulations. It is First Gas’ expectation that all Retailers will act in accordance with their Curtailment Plans during a critical contingency event.

In order to increase efficiency and minimise any scope for confusion, First Gas requests that where possible, all compliance updates come from a single designated point of contact for each Retailer or Large Consumer.

4. Information requirements

4.1. General

The information which First Gas is required to provide to the CCO is specified in Regulations 38 and 38A including metering and pressure data, technical pipeline information and notices issued by First Gas pursuant to a Transmission System Code.

The CCO will have access to information contained in OATIS and First Gas will provide the CCO with relevant information from the SCADA system. Any additional information not readily available, which may be required by the CCO under Regulations 38 and 38A will be requested in writing by the CCO.

4.2. Information systems

First Gas will provide the CCO with an appropriate level of access to the OATIS and SCADA systems to allow compliance with the information provision set out in Regulations 38 and 38A.

4.3. Operational pipeline data to be provided to CCO

First Gas will provide information to the CCO to assist in the determination and declaration of a Critical Contingency, the management/monitoring during the Critical Contingency and the determination to terminate the Critical Contingency. The information to be provided may include all or some of the following:

- (a) Interconnection point data including pressure and volumes of gas transferred
- (b) Injecting production station data including pressure and volumes of gas being injected
- (c) Gas quality data from the injecting production stations in (b)
- (d) Scheduled, and nominated quantities of gas to be received into the system from (a) and (b)
- (e) Expected quantities and levels of system imbalance
- (f) Rate of change of imbalance

- (g) Expected time to reach the P_{\min} Critical Contingency threshold
- (h) Parts of the transmission system affected
- (i) Historical flow, Linepack and pressure data
- (j) Technical pipeline and equipment information
- (k) Performance and status of load shedding
- (l) Progress and status of event that triggered the Critical Contingency
- (m) Expected time until termination criteria are reached
- (n) Recovery of Linepack, pressure levels
- (o) Security of any supplies reinstated from Producers
- (p) Reinstatement of the nominations and scheduling processes
- (q) Expected gas demands upon termination of Critical Contingency
- (r) Historical flow rates, Linepack and pressure data

Outside of any potential or actual Critical Contingency, the CCO requires continuous access to Transmission System information. This information is intended to keep the CCO informed as to the status of the Transmission System and enable the CCO to maintain an appropriate state of readiness for any potential or actual Critical Contingency.

To achieve this, the CCO has developed a Communications Protocol with the TSO, which sets out the information requirements that apply to the TSO during normal system conditions as well as during abnormal system conditions which do not amount to a potential or actual Critical Contingency. These requirements are consistent with r38 and 38A of the Regulations. A summary of the Communications Protocol for information purposes, is provided in Appendix 11 of the CCO's Communications Plan.

It is noted here that under r38 (2) (b) this information must only be used by the CCO for the purpose of performing its obligations under The Regulations.

4.4. Publishing of Information by Asset Owner

In accordance with regulation 54A and section (2) of Schedule 5 of the Regulations, every asset owner whose asset has become damaged or has failed and has caused or contributed to a Critical Contingency is required to ensure that information is published and updated regularly so that interested parties are informed about a Critical Contingency.

The most likely "asset owners" who would cause or contribute to a critical contingency are First Gas as the owner of the transmission system, owners of gas production or treatment facilities, and the owners of third party pipelines interconnected with First Gas' transmission system.

The affected asset owner (which may not be First Gas) must, after the curtailment of consumer installations in curtailment band 3, prepare a statement containing the information contained in Appendix 10.

Where failure of or damage to any part of First Gas' transmission system has caused or contributed to the Critical Contingency, First Gas will post the information required above on the First Gas website (www.firstgas.co.nz) and OATIS (www.oatis.co.nz).

5. Intra-Critical Contingency processes

5.1. Safety statement

If First Gas considers that compliance with any part of the Regulations or any direction issued by the CCO (or any other party) in pursuance of the Regulations would unreasonably endanger the life or safety of any person then First Gas may elect not to comply and/or take alternative actions deemed to be appropriate under the prevailing circumstances.

Should First Gas elect to not comply with the Regulations on the grounds of safety and to take alternative actions it will inform the CCO and any other affected parties. Information will be communicated by telephone and confirmed in writing giving reasons for electing to not comply and details of any appropriate alternative actions.

5.2. Pipeline thresholds

The Critical Contingency thresholds for the transmission system are measured at the points in Table 1. The thresholds themselves are expressed both as a minimum pressure threshold (P_{min}) and in terms of the time remaining to reach P_{min} . The time thresholds are based on the need to allow sufficient time for load curtailment directives to be issued and complied with by the affected consumers in the selected curtailment bands during a Critical Contingency.

The pressure thresholds are selected to ensure that the transmission system and connected gas distribution networks continue to be supplied with gas in sufficient quantities to prevent pressure falling to dangerous or unsustainable levels and to continue to supply gas in sufficient quantities to domestic consumers. Further rationale for the setting of critical contingency thresholds is provided in Appendix 9 of this CCMP.

Table 1 pipeline thresholds

Pipeline Name	Point of Measurement	P_{min} (barg)	Threshold Time (Hours to reach P_{min})
Maui	Rotowaro	32.0	3
Maui	Any other gas gate	30.0	3
South	Waitangirua	37.0	10
Hawkes Bay Lateral	Hastings	32.0	5
Frankley Road to KGTP	KGTP	37.5	3
Bay Of Plenty	Gisborne	30.0	5
Bay Of Plenty	Taupo	30.0	5
Bay Of Plenty	Tauranga	30.0	6
Bay Of Plenty	Whakatane	30.0	5
Morrinsville Lateral	Cambridge	32.0	5
Central (North)	Westfield	42.0	3
North	Whangarei	25.0	5
First Gas Pipeline	Any other gas gate	30.0	5

In the event of pipeline damage or other major physical asset failure threshold time to reach P_{min} may be significantly shorter than the times indicated in the above table. It is also possible that critical contingency thresholds may be breached for short durations due to factors such as:

- (a) high demand or system flow changes;
- (b) operation of compressors;
- (c) individual Station maintenance and instrumentation calibration;

- (d) start-up of Large Consumers;
- (e) monitoring system anomalies; and
- (f) pipeline pigging.

Such temporary breaches will typically be as a result of transient system conditions. First Gas takes a number of steps to ensure that such transient system conditions are appropriately managed and do not result in either the unnecessary declaration of critical contingency events, or contribute to an undue delay in declaring a critical contingency when the circumstances warrant it. For example, First Gas,

- (a) periodically reviews the calculation algorithm within SCADA that monitors the pressure thresholds and ensures that the time sampling frequency is set appropriately in order to minimise the occurrence of “nuisance” alarms;
- (b) has developed a procedure for Gas Control Operators to follow when critical contingency thresholds alarm in SCADA for short durations; and
- (c) maintains close communications with the CCO during potential critical contingency circumstances to ensure that all decisions are fully informed and based on the best available information.

5.3. Declaration of a critical contingency

The process for declaring a critical contingency as described in the Regulations, is summarized below.

The CCO must make a determination that there is a critical contingency if:

- The CCO considers that a breach has occurred of 1 or more of the thresholds that are specified in a CCMP under r25 (1) (a); or

The CCO:

- Has a reasonable expectation that a breach of 1 or more of those thresholds is otherwise unavoidable; and
- Considers that the determination is necessary to achieve the purpose of these regulations

5.4. Curtailment arrangements

During a Critical Contingency First Gas will receive and follow the directions given by the CCO as specified under Regulations 50 and 54.

The CCO is responsible for ensuring its directions (including any curtailment directions) meet the objectives set out in Schedule 2 to the Regulations. The arrangements described in this plan for First Gas have been designed to complement CCO directions and are consistent with those objectives.

If First Gas believes any CCO issued curtailment direction is inconsistent with the objectives set out in Schedule 2 to the Regulations, it will immediately advise the CCO accordingly.

As soon as reasonably practicable following receipt of directions from the CCO, First Gas will issue notices to all parties listed in Appendix 4 in accordance with the process described in section 3.3.

The curtailment bands are specified in Schedule 3 to the Regulations and are reproduced in Appendix 11.

CCO curtailment notices may contain directions to curtail subsets of load within a curtailment band or subsets of geographically located load within a curtailment band. First Gas will assess these directives and suggest to the CCO any alternatives it feels would better serve the purpose of the Regulations.

For the avoidance of doubt, curtailment arrangements under the Regulations are separate from, and independent of, any curtailment carried out under a transmission system code.

5.5. Normal demand restoration arrangements

Curtailed demand will normally be restored in the reverse order in which it was curtailed; i.e., last to be curtailed is first to be restored.

If First Gas believes any CCO issued restoration direction is inconsistent with the objectives set out in Schedule 2 to the Regulations, it will advise the CCO accordingly.

During demand restoration First Gas will monitor the transmission system stability and capacity. Should the system be adversely affected First Gas will contact the CCO immediately and suggest actions to rectify the situation. Suggestions may include requirements for modifications to existing restoration directives or delays in issuing further restoration directives.

CCO directions to restore demand are based on the transmission system pressure and Linepack having stabilised to a level which will allow restoration. However restoration of demands on the downstream connected distribution systems will need to be managed by the gas distributor to ensure that the process takes place in a safe and orderly manner.

5.6. Alternative demand restoration arrangements

Curtailed demand will normally be restored in the reverse order in which it was curtailed i.e. last to be curtailed is first to be restored.

However, in certain circumstances First Gas might consider it desirable for restoration of supply to occur in a different order to the normal restoration order set out in the Regulations.

If First Gas considers that curtailed demand should be restored in an alternate order it will inform the CCO accordingly.

Following consultation between First Gas and the CCO, the CCO will issue demand restoration directives to First Gas. First Gas will issue directions based on the CCO directive to the parties listed in Appendix 4, in accordance with the process described in section 3.3.

Some circumstances where alternative demand restoration arrangements may meet the objectives in Schedule 2 are set out in Appendix 11.

6. Critical Contingency Imbalance

6.1. Contingency imbalance period

The Regulations specify that contingency imbalances should be determined based on either a daily (whole-day) basis or using a sub-daily period¹⁴. First Gas currently uses a whole-day imbalance calculation period to calculate contingency imbalances.

The Regulations define a “whole day” as commencing at 0000 hours on the day on which the critical contingency was declared¹⁵. The day will conclude at 2400 hours on the day in which the critical contingency was terminated¹⁶. This is the same as a “Day” as defined in the transmission system codes and, to be clear, this is in New Zealand Standard Time (NZST).

6.2. Contingency imbalance calculation methodology

As a result of there currently being two distinct transmission system codes, two contingency imbalance calculation methodologies are required. First Gas’ contingency imbalance calculation methodologies for both:

- (a) the Maui Pipeline, and
- (b) the Non-Maui part of the transmission system, are set out in Appendix 8 to this CCMP.

¹⁴ Regulation 75 (a) and (b)

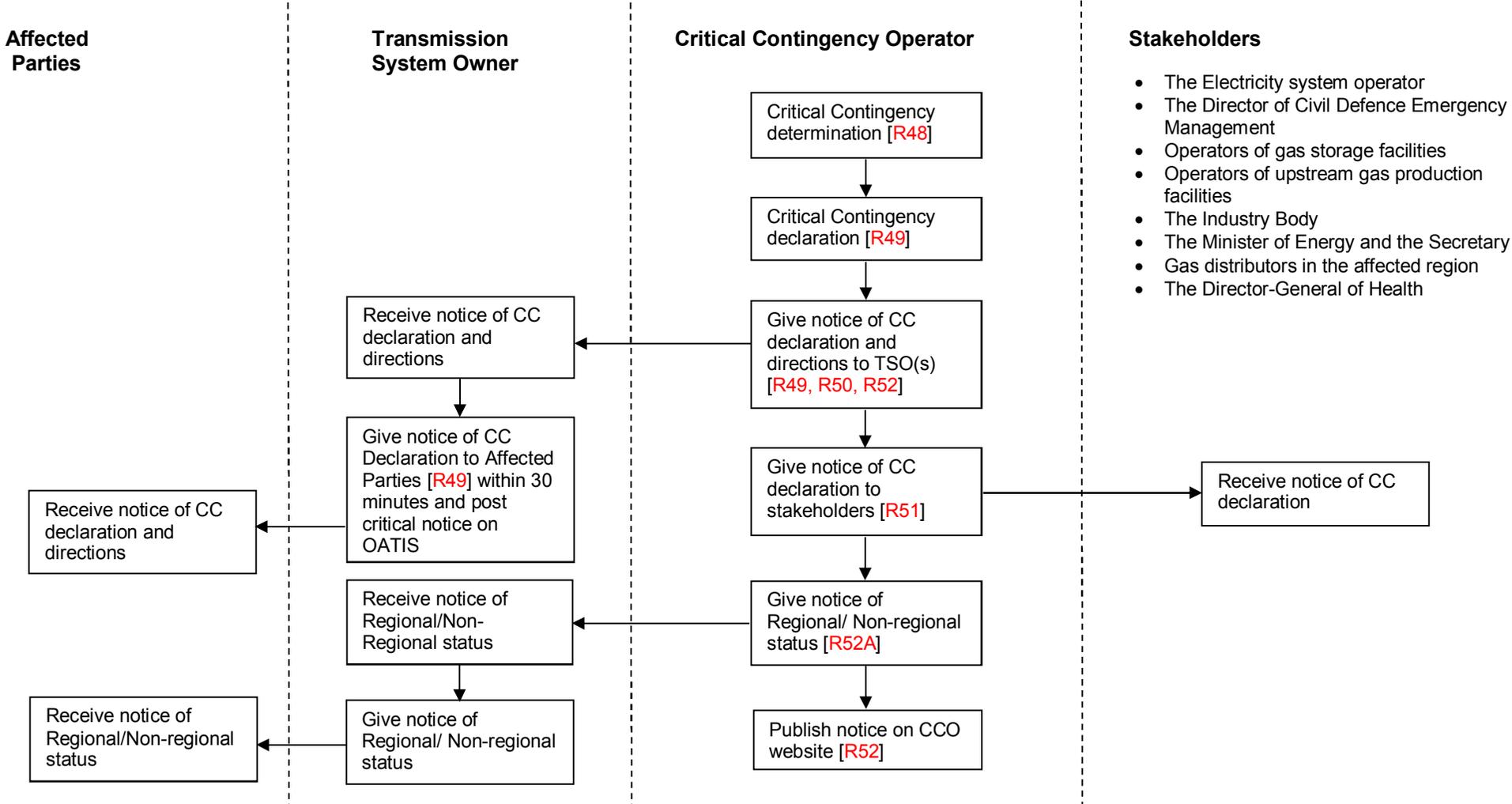
¹⁵ Regulation 75 (b) (ii) (A).

¹⁶ Regulation 75 (b) (ii) (B)

7. CCMP Appendices

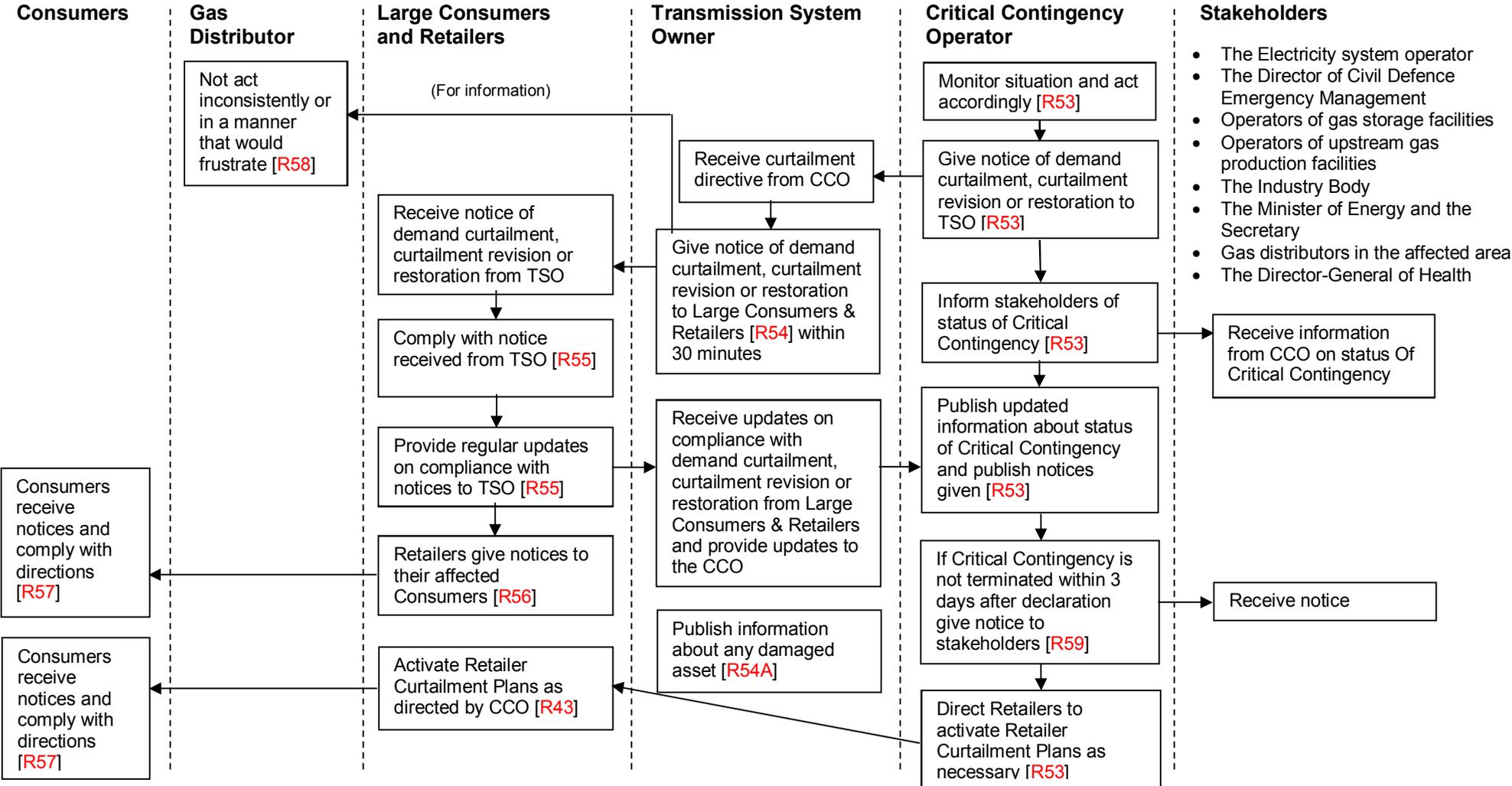
Critical Contingency Management Plan

Appendix 1 - Process for declaration of Critical Contingency

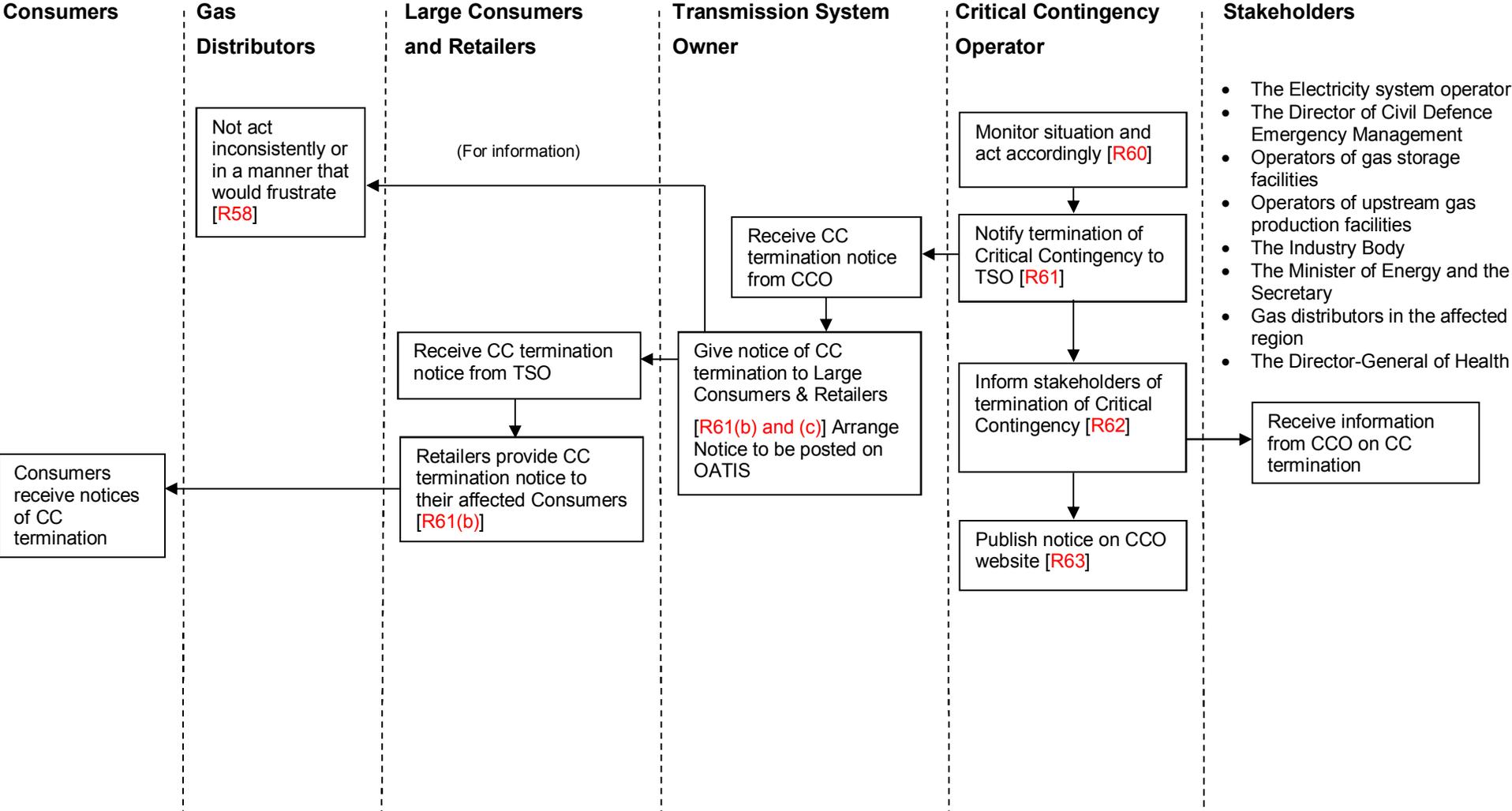


- The Electricity system operator
- The Director of Civil Defence Emergency Management
- Operators of gas storage facilities
- Operators of upstream gas production facilities
- The Industry Body
- The Minister of Energy and the Secretary
- Gas distributors in the affected region
- The Director-General of Health

Appendix 2 - Process during a Critical Contingency



Appendix 3 - Process for termination of Critical Contingency



Appendix 4 - Contact details

Contact details for affected parties are contained and updated within OATIS. It is the responsibility of the identified affected parties to maintain and keep up to date contact details in OATIS.

An updated OATIS contacts report is generated every day and these reports are stored outside of OATIS. In the event that OATIS is unavailable during a Critical Contingency the most recent contacts report will be used.

First Gas as TSO will check that contact details are completed in OATIS for each party prior to the go-live date and at six monthly intervals thereafter. Regular reminders will be issued to affected parties to check and amend their details as appropriate.

Contact details for these parties will be updated using existing OATIS processes. These parties include the following:

Category	Individual Organisations
Transmission System Owners	<ul style="list-style-type: none"> • First Gas is the sole TSO
Gas Distributors	<ul style="list-style-type: none"> • First Gas • Powerco • Vector • Nova Gas • Gasnet
Shippers (both Maui Pipeline and non-Maui parts of the Transmission System)	<ul style="list-style-type: none"> • Contact Energy Limited • Genesis Energy Limited • Greymouth Gas New Zealand Limited • Mighty River Power Limited • Nova Energy Limited • On Gas Limited • Shell New Zealand Limited • Shell Todd Oil Services Limited • Vector Gas Trading Limited • Energy Direct New Zealand Limited (Trustpower) • Wanganui Gas Limited (Trustpower) • Methanex New Zealand Limited • Todd Energy Limited • OMV New Zealand Limited
Retailers	<ul style="list-style-type: none"> • Contact Energy • Genesis Energy • Energy Direct (Trustpower) • Mercury Energy • Nova Gas • Bay of Plenty Energy • On Gas

	<ul style="list-style-type: none"> • Vector Gas Contracts • Greymouth Gas New Zealand Limited
<p>Gas Producers (both Maui Pipeline and non-Maui parts of the Transmission System) (Includes MPOC Receipt Point “Welded Parties”)</p>	<ul style="list-style-type: none"> • Vector Gas Trading Limited - Kapuni Gas Treatment Plant • Greymouth Gas New Zealand Limited- Turangi Production Station, Kowhai Mixing Station • Greymouth Petroleum Limited - Kaimiro Production Station, • Origin Energy Resources (Kupe) Limited - Kupe Production Station • TAG Oil (NZ) Limited – TAG Receipt Point • Cheal Petroleum Limited – Cardiff Mixing Station • Shell Exploration New Zealand Limited - Pohokura Production Station • Shell Todd Oil Services Limited – Maui Production Station • Todd Pohokura Limited – Pohokura Production Station • Todd Energy Limited – McKee Production Station • Westside New Zealand Limited – Mokoia Mixing Station
<p>Storage Facilities</p>	<ul style="list-style-type: none"> • Contact Energy Limited - Ahuroa Storage Facility
<p>Large Consumers (both Maui Pipeline and non-Maui parts of the Transmission System) (Includes MPOC Delivery Point “Welded Parties”)</p>	<ul style="list-style-type: none"> • Contact Energy Limited - Stratford Power Station • Ballance Agri-Nutrients (Kapuni) Limited • Fonterra – Te Rapa Dairy Factory • Methanex New Zealand Limited – Motunui and Waitara Valley Methanol Plants • Genesis Energy Limited – Huntly Power Station

Appendix 5 - Proforma notices

These proforma notices are in the form as set out in the CCO Communications Plan. They will be issued by First Gas in .pdf format.

A5.1: Potential Critical Contingency Notification

Date:	
Time:	
Notice Number:	
Notice Type:	Potential Critical Contingency
Notice Issued To:	First Gas TSO
Notice Copied To:	Stakeholders listed in Information Guide
Current Status:	The CCO has determined that a potential Critical Contingency situation exists.
CCO Instruction to TSO:	Issue notice of Potential Critical Contingency to Large Consumers and Retailers as soon as possible and ensure an appropriate critical notice is posted on OATIS.
Event causing potential Critical Contingency:	
Summary of actions being taken to resolve event and estimated time to resolve:	
Areas of transmission system affected:	
Gas Gates Affected:	

The CCO will terminate the Potential Critical Contingency by either issuing a Notification of Termination of Potential Critical Contingency or declaring a Critical Contingency.

This notice is issued in accordance with the General Critical contingency Notice Conditions contained in the CCO Information Guide, CCO Communications Plan and First Gas CCMP.

The CCO will issue advice of this Notice of Potential Critical Contingency to the stakeholders listed in the CCO Information Guide and publish this notice on the CCO website at <http://www.cco.org.nz>

A5.2: Potential Critical Contingency Termination

Date:	
Time:	
Notice Number:	
Notice Type:	Termination of Potential Critical Contingency
Notice Issued To:	First Gas TSO
Notice Copied To:	Stakeholders listed in Information Guide
Current Status:	The CCO has determined that the Potential Critical Contingency situation has been terminated.
CCO Instruction to TSO:	Issue notice of Termination of Potential Critical Contingency to Large Consumers and Retailers as soon as possible and ensure an appropriate critical notice is posted on OATIS.

This notice is issued in accordance with the General Critical Contingency Notice Conditions contained in the CCO Information Guide, CCO Communications Plan and First Gas CCMP.

The CCO will issue advice of this Notice of Termination of Potential critical Contingency to the stakeholders listed in the CCO Information Guide and publish this notice on the CCO website at <http://www.cco.org.nz>

A5.3: Critical Contingency Declaration Notice

Date:	
Time:	
Notice Number:	
Notice Type:	Declaration of Critical Contingency
Notice Issued To:	First Gas TSO Stakeholders listed in Information Guide Interested Parties
CCO Instruction to TSO:	A Critical contingency has been declared. Communications under the Communication Plan are to commence immediately. Issue notice of Declaration of Critical Contingency to Large consumers and Retailers within 30 minutes of receiving this notice. Ensure an appropriate critical notice is posted on OATIS as soon as reasonably practicable. The CCO will determine demand curtailment requirements and advise accordingly.
Critical Contingency Declaration Time and Date:	
Event causing Critical Contingency:	
Summary of actions being taken to resolve event and estimated time to resolve:	
CCO determination on Regional Critical Contingency Status:	
Areas of transmission system affected:	

This notice is issued pursuant to **Regulation 49** of the Gas Governance (Critical Contingency Management) Regulations 2008 and amendments. All directions issued by the CCO pursuant to this declaration must be complied with.

This notice is issued in accordance with the General Critical Contingency Notice Conditions contained in the CCO Information Guide, CCO Communications Plan and First Gas CCMP.

The CCO will issue advice of this Notice of Declaration of Critical Contingency to the stakeholders listed in the CCO Information Guide and publish this notice on the CCO website at <http://www.cco.org.nz>

The CCO will advise persons who have notified their interest in receiving advice of critical contingency declarations in accordance with **Regulation 51(2)**.

A5.4: Direction to Curtail Demand Notice

Date:	
Time:	
Notice Number:	
Notice Type:	Direction to Curtail Demand
Notice Issued To:	First Gas TSO
Notice Copied To:	Stakeholders listed in Information Guide
CCO Instruction to TSO:	<p>Within 30 minutes of receiving this notice, issue notice of Direction to Curtail Demand to Large Consumers and Retailers in accordance with the Demand Curtailment Directions set out below.</p> <p>Ensure an appropriate critical notice is posted on OATIS as soon as reasonably practicable.</p>
Critical Contingency Declaration Time and Date:	
Event causing Critical Contingency:	
Summary of actions being taken to resolve event and estimated time to resolve:	
CCO determination on Regional Critical Contingency Status:	
Areas of transmission system affected:	
Demand Curtailment Compliance Updates Frequency:	

Demand Curtailment Directions

Band	Approved Designation	Gate #	Gas Gate Name	Curtailment Direction
0				
1				
2				

Band	Approved Designation	Description	Curtailment Direction
3	None	Industrial and commercial consumers >10 TJ/annum	
	Critical Processing	Industrial and commercial consumers >10 TJ/annum with approved designations	
4	None	Medium-sized industrial and commercial consumers >250 GJ/annum	
	Critical Processing	Medium-sized industrial and commercial consumers >250 GJ/annum with approved designations	
5	Essential Services	Consumers >2 TJ/annum with approved designation	
6	Not Applicable	Small commercial customers < 250 GJ/annum	
7	Critical Care	Consumers of any size consumption with approved designation	

Gas Gates Affected by Curtailment Direction for Bands 3-7		
Gas Gate Name	Gas Gate Code	Pipeline Sub-System

This notice is issued pursuant to **Regulation 53(1)(d)(i)** of the Gas Governance (Critical Contingency Management) Regulations 2008 and amendments. All directions issued by the CCO must be complied with.

This notice is issued in accordance with the General Critical Contingency Notice Conditions contained in the CCO Information Guide, CCO Communications Plan and First Gas CCMP.

The CCO will issue advice of this Notice of Direction to Curtail Demand to the stakeholders listed in the CCO Information Guide and publish this notice on the CCO website at <http://www.cco.org.nz>

A5.5: Direction to Revise Demand Curtailment Notice

Date:	
Time:	
Notice Number:	
Notice Type:	Direction to Revise Demand Curtailment
Notice Issued To:	First Gas TSO
Notice Copied To:	Stakeholders listed in Information Guide
CCO Instruction to TSO:	<p>Within 30 minutes of receiving this notice, issue notice of Direction to Revise Demand Curtailment to Large Consumers and Retailers in accordance with the Demand Curtailment Directions set out below.</p> <p>Ensure an appropriate critical notice is posted on OATIS as soon as reasonably practicable.</p> <p>For the avoidance of doubt this notice supersedes the original Notice of Direction to Curtail Demand and any previous notice(s) of Direction to Revise Demand Curtailment. It includes all demand previously directed for curtailment and all additional demands to be curtailed.</p>
Critical Contingency Declaration Time and Date:	
Event causing Critical Contingency:	
Summary of actions being taken to resolve event and estimated time to resolve:	
CCO determination on Regional Critical Contingency Status:	
Areas of transmission system affected:	
Demand Curtailment Compliance Updates Frequency:	

Demand Curtailment Directions

Band	Designation	Gate #	Gas Gate Name	Curtailment Direction
0				
1				
2				

Band	Approved Designation	Description	Curtailment Direction
3	None	Industrial and commercial consumers >10 TJ/annum	
	Critical Processing	Industrial and commercial consumers >10 TJ/annum with approved designations	
4	None	Medium-sized industrial and commercial consumers >250 GJ/annum	
	Critical Processing	Medium-sized industrial and commercial consumers >250 GJ/annum with approved designations	
5	Essential Services	Consumers >2 TJ/annum with approved designation	
6	Not Applicable	Small commercial customers < 250 GJ/annum	
7	Critical Care	Consumers of any size consumption with approved designation	

Gas Gates Affected by Curtailment Direction for Bands 3-7		
Gas Gate Name	Gas Gate Code	Pipeline Sub-System

This notice is issued under **Regulation 53(1)(d)(ii)** of the Gas Governance (Critical Contingency Management) Regulations 2008 and amendments. All directions issued by the CCO must be complied with.

This notice is issued in accordance with the General Critical Contingency Notice Conditions contained in the CCO Information Guide, CCO Communications Plan and First Gas CCMP.

The CCO will issue advice of this Notice of Direction to Revise Demand Curtailment to the stakeholders listed in the CCO Information Guide and publish this notice on the CCO website at <http://www.cco.org.nz>

A5.6: Direction to Restore Curtailed Demand Notice

Date:	
Time:	
Notice Number:	
Notice Type:	Direction to Restore Curtailed Demand
Notice Issued To:	First Gas TSO
Notice Copied To:	Stakeholders listed in Information Guide
CCO Instruction to TSO:	<p>Within 30 minutes of receiving this notice, issue notice of Direction to Restore Curtailed Demand to Large Consumers and Retailers in accordance with the Demand Restoration Directions set out below.</p> <p>Ensure an appropriate critical notice is posted on OATIS as soon as reasonably practicable.</p> <p>For the avoidance of doubt this notice supersedes any previous notice(s) of Direction to Restore Demand. It includes all demand previously directed for restoration.</p>
Critical Contingency Declaration Time and Date:	
Event causing Critical Contingency:	
Summary of actions taken to resolve event:	
CCO determination on Regional Critical Contingency Status:	
Areas of transmission system affected:	

Demand Restoration Directions

Band	Approved Designation	Gate #	Gas Gate Name	Restoration Direction
0				
1				
2				

Band	Approved Designation	Description	Restoration Direction
3	None	Industrial and commercial consumers >10 TJ/annum	
	Critical Processing	Industrial and commercial consumers >10 TJ/annum with approved designations	
4	None	Medium-sized industrial and commercial consumers >250 GJ/annum	
	Critical Processing	Medium-sized industrial and commercial consumers >250 GJ/annum with approved designations	
5	Essential Services	Consumers >2 TJ/annum with approved designation	
6	Not Applicable	Small commercial customers < 250 GJ/annum	
7	Critical Care	Consumers of any size consumption with approved designation	

Gas Gates Affected by Restoration Direction for Bands 3-7		
Gas Gate Name	Gas Gate Code	Pipeline Sub-System

This notice is issued pursuant to **Regulation 53(1)(e)** of the Gas Governance (Critical Contingency Management) Regulations 2008 and amendments. All Directions issued by the CCO must be complied with.

This notice is issued in accordance with the General Critical Contingency Notice Conditions contained in the CCO Information Guide, CCO Communications Plan and First Gas CCMP.

The CCO will issue advice of this Notice to Restore Curtailed Demand to the stakeholders listed in the CCO Information Guide and publish this notice on the CCO website at <http://www.cco.org.nz>

A5.7: Critical Contingency Termination Notice

Date:	
Time:	
Notice Number:	
Notice Type:	Critical Contingency Termination
Notice Issued To:	First Gas TSO Stakeholders listed in Information Guide Interested Parties
CCO Instruction to TSO	The Critical Contingency has been terminated. Issue notice of Termination of Critical Contingency to Large Consumers and Retailers within 30 minutes and ensure an appropriate critical notice is posted on OATIS and direct retailers to advise their consumers that the critical contingency has been terminated.
Critical Contingency Termination Time and Date:	
Current Status:	
Event that caused Critical Contingency:	
Details of Event resolution:	
CCO determination on Regional Critical Contingency Status	
Areas of transmission system affected:	

This notice is issued pursuant to **Regulation 60** of the Gas Governance (Critical Contingency Management) Regulations 2008 and amendments. All directions issued by the CCO pursuant to this declaration must be complied with.

This notice is issued in accordance with the General Critical Contingency Notice Conditions contained in the CCO Information Guide, CCO Communications Plan and First Gas CCMP.

The CCO will issue advice of this Notice of Critical Contingency Termination to the stakeholders listed in the CCO Information Guide and publish this notice on the CCO website at <http://www.cco.org.nz>

The CCO will advise persons who have notified their interest in receiving advice of critical contingency terminations in accordance with **Regulation 62(2)**.

A5.8: Direction to TSO to undertake Reconfiguration

Date:	
Time:	
Notice Number:	
Notice Type:	TSO to undertake Reconfiguration
Notice Issued To:	First Gas TSO
Notice Copied To:	Stakeholders listed in Information Guide
CCO Instruction to TSO:	<p>After consultation with the TSO the CCO has determined that a reconfiguration would contribute to achieving the purpose of the Regulations.</p> <p>Undertake reconfiguration of the transmission system [insert details of reconfiguration to be undertaken]</p>
Event causing potential Critical Contingency:	
Summary of actions being taken to resolve event and estimated time to resolve:	
Areas of transmission system affected:	
Gas Gates affected:	

This notice is issued pursuant to **Regulation 53(1)(dc)** of the Gas Governance (Critical contingency Management) Regulations 2008 and amendments. All directions issued by the CCO must be complied with.

This notice is issued in accordance with the General Critical Contingency Notice Conditions contained in the CCO Information Guide, CCO Communications Plan and First Gas CCMP.

The CCO will issue advice of this Notice to the stakeholders listed in the CCO Information Guide and publish this notice on the CCO website at <http://www.cco.org.nz>

Appendix 6 - Designated TSO representative details

Role	Individual	Email address	Cell phone number	Direct dial number
Responsible for giving (a) communications to the CCO under the Communications Plan (Regulation 25(f)(i)); and (b) directions in accordance with the CCMP (Regulation 25(f)(ii))	Gas Transmission Duty Manager (contactable 24/7 via Gas Operations Control)	gas.controller@firstgas.co.nz duty.officer@firstgas.co.nz	027 442 9051	06 755 0811 or 06 759 6499 or 0088 162 141 3928 (satellite phone)

Appendix 7 - CCO Contact Details

Email Address	cco@cco.org.nz
Internet Site	http://www.cco.org.nz
24/7 Contact Phone Number	0800 226 267

Appendix 8 - Imbalance Calculation Methodology

Contingency Imbalance Calculation Methodology – Maui Pipeline

Italicised terms in this section refer to definitions set out in the MPOC.

First Gas will take the following steps to determine the contingency imbalances for each Maui Pipeline affected party over the period of a critical contingency¹⁷ as soon as possible after the critical contingency has been terminated so that business as usual under the MPOC can resume. In particular but without limitation, First Gas will calculate quantities for all *Welded Points* under steps 1 to 8 as soon as possible after First Gas receives validated data for the relevant Day/s. This is generally by 12 noon on the next succeeding *Business Day* for *Large Station Welded Points* and by the sixth *Business Day* of the month following the Critical Contingency for *Small Station Welded Points*. If such validated data is not received by that time First Gas may determine quantities by using “best available information” as noted in steps 1 and 2 below. A reference to the “quantity calculation time” shall be read accordingly.

1. Retrieve the quantity of gas contractually agreed to inject or entitled to take by all interconnected parties¹⁸ at their interconnected point(s). This would include *Scheduled Quantities at Welded Points* accessed via OATIS.¹⁹ If OATIS data is unavailable, then “best information available” will be used.
2. Retrieve the measured quantities for all interconnected parties at their interconnected point(s). This would include validated injection and off-take gas flow quantities accessed via OATIS, or “best information available” at all *Welded Points*. In the event that OATIS is not available then “best information available” may include raw gas flow data from *Welded Points*. This information would be collected and converted to energy units manually.
3. If necessary, proportionally adjust quantities in accordance with r75 (d).
4. Calculate the volume of each contingency imbalance for each interconnected party’s interconnection point in gigajoules in accordance with r74 (2) (a) & (b).
5. Calculate the aggregate positive contingency imbalance.
6. Calculate the aggregate negative contingency imbalance.
7. If the aggregate negative contingency imbalance exceeds the aggregate positive contingency imbalance, this difference will be treated as a positive contingency imbalance to be allocated to First Gas in accordance with r74 (2) (c) and r75 (f) (i).
8. If the aggregate negative contingency imbalance is less than the aggregate positive contingency imbalance, adjust the allocation to each *Welded Point* with a positive contingency imbalance in accordance with r75 (f) (ii)²⁰.

¹⁷ Price and imbalance provisions do not apply to regional critical contingencies (regulation 82).

¹⁸ An “interconnected party” is defined in The Regulations by reference to the interconnection agreement described in the definition and the part of the transmission system affected by the critical contingency; in the case of Maui Pipeline this is the entire Maui Pipeline. For this purpose the interconnection agreement must: (a) be current; (b) allow for a person “to take gas from, or inject gas into,” an interconnection point; and (c) relate to an “interconnection point” of the kind defined in The Regulations. Note also that The Regulations do not distinguish between *Large Stations* and *Small Stations* therefore *Small Stations* will be subject to contingency imbalance calculations.

¹⁹ OATIS is the information exchange system that *First Gas* uses to receive and display operational pipeline information. The OATIS website homepage is www.oatis.co.nz.

²⁰ When then the critical contingency imbalance quantities have been identified these must be removed from OATIS so that the *Welded Point Running Operational Imbalance* only reflects quantities subject to MPOC provisions and so that business as usual can resume with the least amount of disruption. To achieve this step the critical contingency imbalances will be cashed out at \$0 in OATIS. This approach utilises existing OATIS functionality thereby avoiding the cost to users of OATIS changes. OATIS cash out only adjusts the *Running Operational Imbalance* figure in OATIS, it does not extract the daily *Operational Imbalance* activity amount or *Excess Daily Imbalance* amount associated with a critical contingency imbalance.

9. Receive the critical contingency price in dollars per gigajoule from the industry expert. The timing for First Gas to receive the critical contingency price from the industry expert is described in r72(4).
10. Calculate the value of each contingency imbalance in accordance with r75(h) using the specified formula.
11. Send the contingency imbalance amounts (volume and value) to the industry body in accordance with r77 (1) (a) & (b). This information will be sent in digital spreadsheet format via electronic transmission²¹.
12. If r80(1) applies as regards First Gas, as TSO, then First Gas will advise the industry body as required by r80 of The Regulations.

Contingency Imbalance Calculation Methodology – Non-Maui Parts of the Transmission System

Introduction

Purpose

Describe the business process that First Gas Limited (**First Gas**), as Transmission System Owner (**TSO**), will use to integrate the Contingency Imbalance regime prescribed by the Gas Governance (Critical Contingency Management) Regulations 2008 (**Regulations**) with the business-as-usual balancing regime operated by First Gas as TSO, pursuant to section 8 of the Vector Transmission Code (VTC).

This Appendix does not apply to Regional Critical Contingencies.

Background

The Gas Industry Company (**GIC**) is required under the Regulations to determine and resolve Contingency Imbalances that arise out of a Critical Contingency (Regulations 73 to 82). The GIC must ensure that its functions under this part of the Regulations achieve the objectives of ensuring that fair, effective, and transparent arrangements are implemented to accurately determine Contingency Imbalances and allocate them to affected parties (Regulation 73).

TSOs are required to determine the negative or positive Contingency Imbalances for each affected party over the period of the Critical Contingency (Regulations 74(1) and (2)). First Gas as TSO will determine the Contingency Imbalances on its Transmission System (excluding the Maui Pipeline) based on VTC Shipper Mismatch during the Critical Contingency. Contingency Imbalances on the Maui Pipeline will be calculated in accordance with the methodology set-out in the earlier section of Appendix 8 entitled “Contingency Imbalance Calculation Methodology – Maui Pipeline”.

Note: While all reasonable endeavours have been used to develop the methodology set out in this Appendix 8 in accordance with Regulations 73 to 82, it has become apparent that this methodology is not consistent with the Regulations for all Critical Contingency events. For example, the methodology is not consistent with the Regulations where the Maui Pipeline Linepack has increased during a Critical Contingency event and there is a negative Operational Imbalance at the First Gas TP Welded Points. Accordingly, for each Critical Contingency Imbalance calculation, First Gas will consider whether the methodology in this Appendix 8 is consistent with the Regulations. If First Gas as a TSO (acting reasonably) determines that the methodology is not consistent with the Regulations for a Critical Contingency event, First Gas will consult with the industry body on an alternative method and after that consultation, First Gas may apply an alternative methodology to calculate Contingency Imbalances in a manner consistent with the Regulations.

²¹ If a metering error of a kind for which a correction is required to be computed and made under the MPOC is discovered and corrected in the ordinary course before step 11 occurs, First Gas will recalculate any affected imbalances in accordance with r74 and r75 prior to completing steps 10 – 11.

Definitions

In this Appendix:

BPP Account has the meaning given to it by the VTC;

BPP Allocation Day has the meaning given to it by the VTC;

BPP Trustee has the meaning given to it by the VTC;

CC Day means a Day on which a Critical Contingency is in effect;

CC Month means a month containing a CC Day;

CC Period (or CCP) means, in respect of each Critical Contingency, the period starting on CCP_{Start} and ending on CCP_{End} ;

CCP_{Start-1} means, in respect of each Critical Contingency, the Day before the Day on which a Critical Contingency is declared;

CCP_{Start} means, in respect of each Critical Contingency, the Day on which a Critical Contingency is declared;

CCP_{End} means, in respect of each Critical Contingency, Day on which the Critical Contingency was terminated;

CCP_{End+1} means, in respect of each Critical Contingency, the Day after the Day on which a Critical Contingency was terminated;

Closing Position has the meaning given to it by the MBB D+1 Pilot Agreement;

Contingency Imbalance has the meaning given to it in the Regulations;

Critical Contingency (or CC) has the meaning given to it in the Regulations;

Critical Contingency Price has the meaning given to it in the Regulations;

Day has the meaning given to it by the VTC;

Delivery Quantity has the meaning given to it by the MBB D+1 Pilot Agreement;

Incentive Pool Debits has the meaning given to it by the MPOC;

Linepack has the meaning given to it by the VTC;²²

Maui Contingency Pool means the contingency pool (representing the Maui Pipeline), reconciled in accordance with the First Gas Critical Contingency Management Plan: MAUI PIPELINE approved under Regulation 30 of the Regulations;

Maui Pipeline Operating Code (MPOC) has the meaning given to it by the Regulations;

MBB D+1 Pilot Agreement (D+1 Agreement) means the MBB D+1 Pilot Agreement dated 1 December 2015 signed between First Gas and the Shippers as amended from time to time in accordance with its terms (and includes any replacement agreement or document as well as any regulatory substitution)

²² "Linepack" as calculated by Regulation 75 (f)(i) and (ii) includes both a change in physical Linepack as well as the Imbalance accumulated during the Critical Contingency.

Mismatch means, in relation to a Day, a Pipeline and a VTC Shipper, that Shipper's aggregate Receipt Quantity on that Pipeline minus that VTC Shipper's aggregate Delivery Quantity on that Pipeline;

Non-Code Shipper has the meaning given to it by the VTC;

OATIS has the meaning given to it by the VTC;

Operational Imbalance (or OI) has the meaning given to it by the MPOC;

Peaking Limit has the meaning given to it by the MPOC;

Pipeline has the meaning given to it by the VTC;

Positive Mismatch Price has the meaning given to it by the MPOC;

Receipt Quantity has the meaning given to it by the VTC;

Regional Critical Contingency has the meaning given to it by the Regulations;

Residual means, in respect of each shipper or First Gas, the difference between that party's adjusted Contingency Imbalance calculated under Regulation 75(f)(ii) and that party's Contingency Imbalance determined under Regulations 74(2)(a) and (b);

Residual Imbalance has the meaning given to it by the MBB D+1 Pilot Agreement;

Running Mismatch has the meaning given to it by the MBB D+1 Pilot Agreement;

Running Operational Imbalance (or ROI) has the meaning given to it by the MPOC;

TP Welded Point has the meaning given to it by the MPOC;

Transmission System Owner (TSO) has the meaning given to it by the Regulations;

First Gas Contingency Pool means the contingency pool representing the First Gas Transmission System, reconciled in accordance with the process in this Appendix;

Vector Running Imbalance (VRI) has the meaning given to it by the MBB D+1 Pilot Agreement;

Vector Transmission Code (VTC) has the meaning given to it by the Regulations;

VTC Shipper means a Shipper as defined in the VTC; and

Welded Point has the meaning given to it by the MPOC.

Amendments: A reference to the Regulations, the MPOC or the VTC includes any amendment made to the Regulations, the MPOC or the VTC.

Process

To properly integrate the Contingency Imbalance regime prescribed in the Regulations with First Gas's business-as-usual regime under section 8 of the VTC (which relates to balancing and peaking), First Gas will, subject to the Note in the Background above, carry-out the following process:

Brief Overview

- Any VTC Shippers share of Contingency Imbalances will be removed so that each VTC Shippers' Closing Position on CCP_{End} is identical to their Closing Position on $CCP_{Start-1}$. Regulation 75(a) and (b) specify that Contingency Imbalances should be determined using

either a daily (whole-day) basis or part-day basis. First Gas is unable to determine Contingency Imbalances on a part-day basis as hourly or part-day downstream allocations cannot be obtained;

- In circumstances where there are excess positive Contingency Imbalances in the First Gas Contingency Pool then Regulation 75(f)(ii) will apply. This means that after adjustments under Regulation 75(d), any Residual Contingency Imbalance that wasn't "cashed-out" under the Regulations must be returned to the BPP;
- Any Residual will be returned to each VTC Shipper as a Residual Imbalance on CCP_{End+1} ;
- The return of any Residual will be pro-rated across the Pipelines where it was created, so that VTC Shippers will not receive a more positive share of Contingency Imbalance back into a Pipeline than was removed on all CC Days; and
- Balancing cost allocations under the D+1 Agreement will resume for CCP_{End+1} onwards.

Detailed Methodology

Determine VTC Shipper Mismatch for each CC Day

Why: So that Mismatch can be used for the determination of any Contingency Imbalance.

When: As soon as is reasonably practicable after CCP_{End}.

- 1) Calculate the Mismatch for each CC Day, Pipeline affected by the Critical Contingency and VTC Shipper.

Make the Closing Positions for each CC Day, Pipeline and VTC Shipper equal to the Closing Positions on CCP_{start-1}

Why: So that Contingency Imbalances do not effect VTC Shipper positions after the CC.

When: As soon as is reasonably practicable after CCP_{End}.

- 2) Set VTC Shipper Mismatch to zero for all CC Days and Pipelines for the purposes of the D+1 Agreement.

Return non-Maui pipelines Linepack to pre-CC levels

Why: If First Gas has an aggregate decrease in Linepack across all Pipelines²³ during the CC, then the Linepack must be restored to normal levels as soon as possible to ensure security of supply is maintained.

When: As soon as is reasonably practicable after CCP_{End}.

- 3) Determine if First Gas had a decrease in Linepack across all Pipelines during the CC Period, using the following calculation:

$$\Delta \text{ Linepack (All Pipelines)} = \sum \text{Linepack}_{\text{end}} - \sum \text{Linepack}_{\text{start}}$$

Where:

$\Delta \text{ Linepack (All Pipelines)}$ is the change in Linepack during CCP on all Pipelines.

$\sum \text{Linepack}_{\text{start}}$ is the Linepack on all Pipelines, calculated for 0:00 hours (NZST) of CCP_{Start}.

$\sum \text{Linepack}_{\text{end}}$ is the Linepack on all Pipelines, calculated for 24:00 hours (NZST) of CCP_{End}.

²³ “Linepack” as calculated by regulation 75 (f) (i) and (ii) includes both a change in physical Linepack as well as the Imbalance accumulated during the Critical Contingency.

If the calculation results in a positive number, there has been a decrease in the non-Maui pipelines linepack, proceed to step 4).

If the calculation results in a positive number, there has been an increase in linepack, skip step 4) and go to step 5).

- 4) Discuss the decrease in linepack with Gas Control and if necessary organize the purchase of gas.

If First Gas has a gas supply agreement for the non-Maui pipelines then utilise this to its maximum capacity first.

For quantities greater than the gas supply agreement, follow 8.4 of the VTC if you have time for a formal request for tender process (RFT).

If a RFT is not practical then use the gas wholesale market on the Maui Pipeline.

If the gas can only be sourced from the Maui Pipeline's linepack then discuss with Gas Control and the Scheduling team how this will happen.

For any supply of gas from the Maui Pipeline you will need to enter the appropriate nominations in Maui OATIS. If the gas purchase is also to alleviate ROI due to change in linepack during the CC then organize a displaced gas nomination.

Returning to business as usual after the Critical Contingency

Why: So that the balancing regime detailed in section 8 of the Vector Transmission Code can resume normal operation as soon as possible.

When: On CCP_{End+1}.

- 5) On the Day after the Critical Contingency is terminated all MPOC and VTC balancing provisions will resume. This means that "cash-outs", Incentive Pool Debits and Peaking Limit charges will resume flowing through the BPP in accordance with those codes but based on Running Mismatch and First Gas Running Imbalance positions that do not include Mismatch or First Gas Imbalance generated on the CC Days, other than any Residual.

Determine all Contingency Imbalances

Why: To comply with the Regulations (Regulations 74 and 75).

When: As soon as is reasonably practicable.

- 6) In the spreadsheet (referred to in step 1)), sum each shipper's Mismatch position across all Pipelines and all CC Days. This will calculate a single positive or negative Contingency Imbalance figure for each shipper in the First Gas Contingency Pool, in accordance with Regulation 74(2)(a)(iii) and (b)(iii).

- 7) Calculate First Gas's Contingency Imbalance in the First Gas Contingency Pool at each TP Welded Point as follows:

- Enter the OI at each TP Welded Point on each CC Day into the spreadsheet;

- Sum the OI on each CC Day together at each TP Welded Point, to calculate an aggregate OI in respect of each TP Welded Point; and
- Multiply the aggregate OI at each TP Welded Point by -1, to calculate First Gas's Contingency Imbalance in respect of each TP Welded Point, pursuant to Regulation 74(2)(a)(i)-(ii) and Regulation 74(2)(b)(i)-(ii).

The aggregate OI is multiplied by -1, because when First Gas has a positive OI at a TP Welded Point during a CC, it has a negative Contingency Imbalance in the First Gas Contingency Pool and an opposing positive Contingency Imbalance in the Maui Contingency Pool²⁴.

- 8) Calculate the aggregate positive Contingency Imbalance in the First Gas Contingency Pool by summing all the positive Contingency Imbalances determined in step 6) and step 7) together.
- 9) Calculate the aggregate negative Contingency Imbalance in the First Gas Contingency Pool by summing the absolute value of all the negative Contingency Imbalances calculated in step 6) and step 7) together.
- 10) In the event that the aggregate negative Contingency Imbalances are less than the aggregate positive Contingency Imbalances then this reflects a gain in First Gas's "Linepack"²⁵ during the Critical Contingency. In this situation, adjust all positive Contingency Imbalances in accordance with the formula in Regulation 75(f)(ii), namely:

$$M_A = M_{+ve} \times (\sum M_{-ve} / \sum M_{+ve})$$

Where:

M_A is an adjusted positive Contingency Imbalance.

$\sum M_{-ve}$ is the absolute value of the aggregate negative Contingency Imbalances in the First Gas Contingency Pool.

$\sum M_{+ve}$ is the aggregate positive Contingency Imbalances in the First Gas Contingency Pool.

The Residual positive Contingency Imbalance (being the difference between M_A and M_{+ve}) will be put back into the BPP on CCP_{End+1} in steps 13) and 14).

A reduction in First Gas's positive Contingency Imbalance in the First Gas Contingency Pool due to the adjustment means that First Gas will pay the Critical Contingency Price for a gain in "Linepack". This is due to a shortfall between the funds First Gas paid into the Maui Contingency Pool for a negative Contingency Imbalance and the funds First Gas received back from the First Gas Contingency Pool for its adjusted positive Contingency Imbalance.

²⁴ These two Contingency Imbalances may not be equal-and-opposite if different adjustment factors are used when applying regulation 75 (f) (ii) (see step 10)).

²⁵ "Linepack" as calculated by reg 75 (f) (i) and (ii) includes both a change in physical Linepack as well as the Imbalance accumulated during the Critical Contingency.

- 11) In the event that the aggregate negative Contingency Imbalances exceed aggregate positive Contingency Imbalances then this reflects a decrease in First Gas's "Linepack"²⁶ during the Critical Contingency. The difference will be treated as a positive Contingency Imbalance for First Gas in accordance with Regulation 74(2)(c) and Regulation 75(f)(i).
- 12) First Gas will not modify Contingency Imbalances in accordance with Regulation 75(d) unless explicitly instructed to do so by the GIC. By taking this approach, First Gas assumes shippers acted on curtailment instructions issued by the CCO (Regulation 75(c)).

Return the Residual to Running Mismatch

Why: So that title to Gas is maintained under the VTC when positive Contingency Imbalances are adjusted by step 10).

Note: Under the D+1 Agreement VRI is a figure calculated by difference, because of this you will not need to calculate a Residual to VRI.

When: As soon as is reasonably practicable after CCP_{End+1} ²⁷.

- 13) If step 10) adjusted the positive Contingency Imbalances in the First Gas Contingency Pool, then calculate the Residual in respect of each shipper with a positive Contingency Imbalance²⁸, as follows:

Residual =

$$\sum \text{Shipper Mismatch} - \text{Positive Contingency Imbalance}$$

Where:

\sum Shipper Mismatch is the sum of that shipper's Mismatch across All Pipelines, on all CC Days²⁹; and

Positive Contingency Imbalance is the shipper's adjusted positive Contingency Imbalance that is determined under step 10).

If step 10) did not adjust positive Contingency Imbalances in the First Gas Contingency Pool, then skip step 14) and go on to step 15).

- 14) For each shipper with positive Contingency Imbalance, return its Residual to the BPP by adding an amount (*Amount*) to its Residual Imbalance to be applied against shipper positions on CCP_{End+1} .

²⁶ "Linepack" as calculated by regulation 75 (f) (i) and (ii) includes both a change in physical Linepack as well as the Imbalance accumulated during the Critical Contingency.

²⁷ This means that balancing costs allocated from CCP +1 onwards are based on Running Mismatch positions inclusive of any Residual.

²⁸ Note that VTC Shippers with negative Contingency Imbalances will not have a Residual calculated, or returned to the BPP, because all negative Contingency Imbalances are "cashed-out" via the contingency cash pool (regulation 78).

²⁹ This is the original Mismatch shown in the BPP, before it was removed from the BPP as Critical Contingency Imbalance in step 2).

The Amount is calculated as follows, in respect of each shipper with a positive Contingency Imbalance and in respect of each Pipeline:

Amount =

(Positive Mismatch / Total Positive Mismatch) * Residual

Where:

Positive Mismatch is the sum of the shipper's positive Mismatch³⁰, on all CC Days, on a Pipeline;

Total Positive Mismatch is the sum of the shipper's positive Mismatch³¹ on all CC Days, across All Pipelines; and

The Residual is calculated in step 13).

15) Post the following information on OATIS as a public notice:

- Each VTC Shipper's negative Contingency Imbalance;
- Each VTC Shipper's positive Contingency Imbalance, both before and after any adjustment under Regulation 75(f)(ii);
- First Gas's positive or negative Contingency Imbalance at each TP Welded Point, both before and after any adjustment under Regulation 75(f)(ii); and
- First Gas's positive Contingency Imbalance (if any), both before and after any adjustment under Regulation 75(f)(ii).

Send the Contingency Imbalances to the Gas Industry Company.

Why: To comply with Regulation 77.

When: Between the publication of BPP invoices for the CC Month and the deadline specified by Regulation 77(1), being 36 business days after the end of the month in which the CC was terminated.

16) Receive the Critical Contingency Price in dollars per gigajoule from the industry expert.

17) Calculate the dollar value of each Contingency Imbalance, in accordance with Regulation 75(h).

³⁰ This is the original Mismatch shown in the BPP, before it was removed from the BPP as Critical Contingency Imbalance in Step 2).

³¹ This is the original Mismatch shown in the BPP, before it was removed from the BPP as Critical Contingency Imbalance in Step 2).

- 18) Send the following Contingency Imbalance figures to the GIC in accordance with Regulation 77(1)(a) and (b):
- Each shipper's adjusted positive or negative Contingency Imbalance calculated in steps 6) and 10);
 - First Gas's adjusted positive or negative Contingency Imbalance at each TP Welded Point, as a party that injects gas into its Transmission System under Regulation 74(2)(a)(i) and Regulation 74(2)(b)(i), as calculated in steps 7) and 10);
 - The positive Contingency Imbalance attributed to First Gas, as TSO, by Regulation 74(2)(c) (refer to step 11));
 - No Contingency Imbalance for each interconnected party injecting Gas into First Gas's transmission system (e.g. Kapuni, Mokoia, Stratford 3, Kaimiro, etc.)³²; and
 - The dollar value of each Contingency Imbalance, calculated in step 17).
- 19) If First Gas considers that it has been allocated a Contingency Imbalance in error, then First Gas will advise the GIC as required by Regulation 80(1).
- 20) If the GIC determines that a material error has affected the Contingency Imbalance calculations and directs First Gas to recalculate them under Regulation 80(3), then First Gas will recalculate the Contingency Imbalances (and new Residuals) by repeating steps 2) – 13) (inclusive), using the best information available.
- 21) First Gas will supply the recalculated Contingency Imbalances to the GIC.
- 22) First Gas will return any difference between the old and new Residuals to Running Mismatch, by repeating step 14), replacing all references to 'Residual' with 'Difference' (defined as the new Residual – the old Residual).

Note: Residuals are considered as Information under section 8.21 of the VTC. Accordingly, any cash-out allocations, between CCP_{End+1} and the date when the new Residuals are determined, will not be reopened by the recalculated Contingency Imbalances.

³² First Gas considers that interconnected parties on the First Gas Transmission System injecting Gas into the First Gas Transmission System are not intended to be treated as "interconnected parties" under the Regulations. The GIC has acknowledged this. Interconnection agreements on the First Gas Transmission System set out the terms on which a party may connect to the First Gas Transmission System, with any under or over injection captured by shipper Mismatch.

First Gas's Operating Procedure after the CC

When a CC has been terminated and First Gas suffered a decrease in Linepack as a result of the CC, First Gas will need to purchase Gas to restore the Linepack to pre-CC levels (including by buying Gas by way of "cash-out" under the MPOC). If the net payment First Gas receives under the Regulations in respect of both the First Gas and Maui Contingency Pools is either less or more than the cost of purchasing this replacement Gas, then First Gas will issue an additional invoice or credit note to the BPP Trustee (as applicable), calculated by reference to that shortfall/surplus (*Additional Payment*).

The value of the Additional Payment shall be the difference between the net payment First Gas receives for the non-Maui pipelines under the Regulations in respect of both the First Gas and Maui Contingency Pools and the cost incurred by First Gas in purchasing gas to restore the depleted Linepack.

The BPP Allocation day applicable to these Additional Payments shall be CCP_{End+1}.

Where First Gas issues the BPP Trustee with an invoice in respect of an Additional Payment, the BPP Trustee shall make a payment out of the BPP Account to First Gas for the amount of the invoice (*Invoiced Amount*). Each Shipper who has a negative Running Mismatch on the relevant Pipeline on the BPP Allocation Day shall pay into the BPP Account the proportion of the Invoiced Amount that such Shipper's negative Running Mismatch on that Pipeline on the BPP Allocation Day bears to the aggregate of all Shippers' and all Non-Code Shippers' negative Running Mismatch, in each case on that Pipeline and on the BPP Allocation Day.

Where First Gas issues the BPP Trustee with a credit note in respect of an Additional Payment, the BPP Trustee shall invoice First Gas for the amount of the credit note (*Credited Amount*). Each Shipper who has a positive Running Mismatch on the relevant Pipeline on the BPP Allocation Day shall be entitled to receive from the BPP Account the proportion of the Credited Amount that such Shipper's positive Running Mismatch bears to the aggregate of all Shippers' and all Non-Code Shippers' positive Running Mismatch, in each case on that Pipeline and on the BPP Allocation Day.

Invoices to be issued referred to above, and payments to be made into or out of the BPP Account referred to above, shall be issued and made in accordance with sections 15 and 16 of the VTC.

Appendix 9 – Critical Contingency Threshold Rationale

CCM Regulations Requirements

Schedule 1 of the Regulations sets out:

- (a) a list of pipeline names that correspond to key parts of the transmission system;
- (b) a minimum operating pressure range for each of those pipelines;
- (c) both a minimum and maximum time before minimum operating pressure is reached on each of those pipelines; and
- (d) a point of measurement tied to a particular location or gas gate on each of those pipelines.

Section 25(1)(a) of the Regulations lists the requirements First Gas as TSO must take into account when setting the respective pressure thresholds to be recorded in its CCMP. Namely, each selected threshold at the required locations must:

- (a) be within the limits set out in Schedule 1;
- (b) be specified in terms of the projected number of hours remaining before the minimum operating pressure is reached; and
- (c) specify the minimum operating pressure.

Section 25(1)(a) states that the “minimum operation pressure” means the minimum pressure that is required to maintain the supply of gas across the relevant part or parts of the transmission system and to avoid disruptions of distribution systems connected to the transmission system. It is also noted that the minimum operation pressure must be measured at the points of the transmission system specified in Schedule 1.

General Principles

It is considered that in addition to the requirements set out in the CCM Regulations, there are a number of general principles that apply to the setting of the critical contingency pressure thresholds. Outlined below is a list of some of those general principles that First Gas believes need to be taken into account when setting the pressure thresholds:

- (a) The minimum operating pressures reflect the physical characteristics of the system and are unlikely to change significantly over time;
- (b) Delivery Point station equipment is provided with sufficient inlet pressure to allow safe and satisfactory operation. Minimum pressures are to be selected to maintain satisfactory pressure differentials across the station equipment;
- (c) Calculation of the trigger level in hours will depend on the nature of the load which would be curtailed if a critical contingency were triggered. For example, points supplying networks with large loads (that are relatively quick to curtail) will tend to require shorter lead times for curtailment than points supplying networks containing only smaller loads (which are more numerous and, therefore, take longer to curtail);
- (d) Estimates of the total number of consumers in each curtailment band (0-7) and the sensitivity of the location on the transmission system;
- (e) Thresholds need to be set at such a level that they are not going to be breached under normal or moderately abnormal operating conditions. Thresholds may be breached for short durations due to transient conditions. The details of such transient breaches are documented in section 5.2 of the CCMP;
- (f) Non-linear line pack depletion and consequently pressure reduction occurring due to diurnal swing and curtailment actions taken in accordance with transmission codes;

- (g) Historical data on actual system demands at different times of year;
- (h) The use of compressors to during the time preceding a Critical Contingency to maximise available line pack and pressure in the affected parts of the system.

Specific Thresholds

While there are a number of general principles that apply to the setting of any of the critical contingency pressure thresholds prescribed in Schedule 1, it is also important to assess each threshold on an individual basis due to the diversity of customers, load, geography and operating conditions across different parts of the transmission system. First Gas has developed an internal process pertaining to the rationale for individual pressure thresholds. First Gas will continue to revisit and update this document on a periodic basis, or if required due to material changes to the transmission system or operating parameters.

Appendix 10 – Statements by Asset Owners

The affected asset owner who caused or contributed to a critical contingency (which may not be First Gas) must after the curtailment of consumer installations in curtailment band 3, prepare a statement containing the information:

- (a) a description of the damaged or failed asset and the cause of the damage or failure;
- (b) what actions are being taken by the asset owner to effect repairs;
- (c) the likely duration of each step of the repair process, including any testing and certification required before the asset can be restored to service;
- (d) the asset owner's best estimate of the time at which the asset will be returned to service
- (e) if the asset will be temporarily restored to a reduced level of service, information about the reduced capacity and likely duration of reduced capacity;
- (f) an assessment of the likely accuracy of the times provided in paragraphs (c), (d) and (e) as well as a description of the identified risk factors and the likely effects that each would be expected to have on those times.

Appendix 11 – Additional Demand Curtailment & Restoration Information

Curtailment Bands

Curtailment band	Consumption in Tera Joules (TJ)	Description
0	N/A	Gas off taken for injection into gas storage
1	More than 15TJ per day	Consumers (excluding essential service providers) supplied directly from the transmission system who have an alternative fuel capability
2	More than 15TJ per day	Consumers (excluding essential service providers) supplied directly from the transmission system who do not have an alternative fuel capability
3	More than 10TJ per annum and up to 15TJ per day	Large industrial or commercial consumer installation
4	More than 250 GJ per annum and up to 10 TJ per annum	Medium-sized industrial or commercial consumer installation
5	More than 2TJ per annum	Any consumer installation (whether or not in bands 0-4) to the extent that an essential services designation applies to the installation
6	250 GJ or less per annum	Small commercial consumer installation
7	Any	Any consumer installation (whether or not in bands 0-6) to the extent that a critical care designation applies to the installation

Alternate Demand Restoration Arrangements

Some circumstances where alternative demand restoration arrangements may meet the objectives in Schedule 2 of the Regulations include:

- (a) Partial restoration of consumers in curtailment bands 1, 2 and 3 ahead of, or at the same time as consumers in bands 4 - 7. This would allow large consumers to make preliminary preparations for a return to full production (for example performing a “cold start” on large plant). The individual circumstances and requirements of each large consumer would be considered by First Gas in conjunction with the CCO.
- (b) Full or partial restoration to electricity generation facilities classified as large consumers ahead of curtailment bands 3 - 7. This may be required in circumstances where the Electricity System Operator requests support from gas fired generation facilities to prevent widespread electricity outages. The decision to use this alternative restoration approach would be made in conjunction with the CCO and the Electricity System Operator.
- (c) Consumers in bands 0, 1, 2 and 3 being restored ahead of consumers in bands 4 - 7. This could occur where technical and operational issues have resulted in a longer term outage on a discrete section of the pipeline located downstream from the main gas supply, leaving some parties unaffected by the outage. The decision to use this alternative restoration approach would be made in conjunction with the CCO.
- (d) In the event of non-specification gas having entered the system, demand to consumers in bands 0, 1, 2 and 3 may be restored ahead of bands 4 – 7 if the non-specification gas can be consumed safely and efficiently by these consumers. In these circumstances venting of large quantities of non-specification gas may be avoided.

The possible alternative arrangements above could better achieve the purpose of The Regulations by ensuring efficient use of gas, “minimising the net public cost”, and “ensuring the effective operational management of a critical contingency”. These are objectives specified in Schedule 2 of the Regulations.