Waipa Networks Limited

Security of Supply Participant Rolling Outage Plan

Electricity Network Contingency Plan

March 2022

Details of Document Amendments February & March 2022	
Section Amended	Description of Amendment
1.0	Renamed: System Operator Security of Supply Outage Plan to System Operator Rolling Outage Plan (SOROP)
2.0	Updated terminology
3.0	Updated terminology
4.2	Replace the Authority with the System Operator
5.0	Added to scenarios that constitute an Immediate Event. Replace the Authority with the System Operator
6.0	Waipa Role Responsibilities updated
7.0	Update contact details for System Operator
8.2	Estimated percentage of interruptible load added.
8.3.5	APL feeder added to manual load shedding list after AUFLS event.
8.3.6	New section added to provide actions and prioritised feeder shedding when triggered by grid emergency.
8.3.7	Load disconnection and restoration requirements added in line with System Operator Rolling Outage Plan requirements.
11.0	Confirmation added that both Cambridge and Te Awamutu GXPs will be included in rolling outages. Confirmation that there are no agreements with retailers or consumers that prevent Waipa Networks responding to System Operator directions.
16.0	Adjustments to feeder classifications, receipt acknowledging rolling outage directions and application of load switching constraints during disconnection and restoration of demand.
17.0	Allocation of reporting of rolling outage performance to Network Development and Engineering Manager.

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1.0 Introduction

This plan was written to comply with the System Operator's System Operator Rolling Outage Plan (SOROP).

The procedures outlined are in response to major generation shortages and/or significant transmission constraints. Typical scenarios include unusually low inflows into hydro-generation facilities, loss of multiple thermal generating stations or multiple transmission failures.

How an event is declared and how the System Operator (SO) should communicate its requests are detailed.

The main energy saving measure listed is rolling outages and how these are structured and implemented is discussed.

2.0 Purpose

Under the regulations, a Participant Rolling Outage Plan (PROP) is required to specify the actions that would be taken to;

- Reduce electricity consumption when requested by the SO
- Comply with requirements of the SO's System Operator Rolling Outage Plan (SOROP)
- Comply with Electricity Industry Participation Code 2010 (the Code)
- Supplement the SO's System Operator Rolling Outage Plan

Reducing demand by disconnecting supply to consumers will be a last resort after all other forms of savings including voluntary savings had been exhausted. Waipa Networks Ltd (Waipa) will always endeavour to keep supply on to its consumers where possible.

3.0 Definitions

AUFLS	Automatic Under Frequency Load Shedding
Code	Electricity Industry Participation Code 2010
Control Centre	WEL Networks Control Centre. Waipa has contracted WEL Networks to provide its system operational services
CDEM	Civil Defence Emergency Management
EDB	Electricity Distribution Business as defined in section 2(1) of the electricity Act 1992
Feeder	A high voltage supply line typically supplying between 100 and 2500 consumers
GXP	Transpower Grid Exit Point
GEN	Grid Emergency Notice
Lifelines	Waikato Lifeline Utilities Group
PROP	Participant Rolling Outage Plan (this plan)
Rolling Outages	Planned electricity disconnections spread over different parts of the network at different times to avoid prolonged outages at any one location
Security Coordinator	Person responsible for system security on the Grid
SOROP	System Operator Rolling Outage Plan
Supply Shortage Declaration	Declaration made by the System Operator under Regulation 9
System Operator, SO	Operator of the New Zealand's Electricity Transmission Grid
Grid	New Zealand's Electricity Transmission Grid
Waipa	Waipa Networks Limited

4.0 Background

4.1 Transpower

Transpower is a State Owned Enterprise, that owns and operates New Zealand's Electricity Transmission Grid (the Grid) – the network of high voltage transmission lines and substations that transports bulk electricity from where it is generated to Electricity Distribution Business' (EDB) such as Waipa.

As System Operator, Transpower manages the real-time operation of the Grid balancing the amount of energy generated with demand.

4.2 System Operator

A function of the System Operator (SO) under the Electricity Act is to use reasonable endeavours to ensure the security of electricity supply. The System Operator has other various security of supply activities including forecasting supply and demand, calculating and publishing hydro risk curves and publishing and implementing the System Operator Rolling Outage Plan under certain circumstances.

4.3 Waipa Networks Limited

Waipa is the EDB that owns and operates the electricity assets (lines, cable and transformers etc) that convey power from Transpower's GXPs at Cambridge and Te Awamutu to the surrounding environ.

5.0 Range of Events

Events that could lead the System Operator to make a supply shortage declaration can in general terms be categorized as;

- Developing Events: An event that evolves over time, for example, a period of unseasonably low inflows to hydro catchments, and
- Immediate Events: An event that occur with little or no warning, usually as a result of a transmission line or major power station failure or a shortfall of generation available for dispatch.

5.1 Major Incident

A Developing or Immediate event will be classed by Waipa as a major incident and Waipa's management team will activate the appropriate contingency plan and manage the incident accordingly.

Communication with Electricity Retailers, civil defence and other stakeholders will be as outlined in the Rolling Outage Public Notice (Draft) (Appendix B).

6.0 Waipa Role Responsibilities

Role	Waipa Personnel
Receive communication from SO	Chief Executive Officer Network Asset Manager
Receive communication from SO	WEL Control Centre
Implement this Plan, prepare load shedding schedules	Network Asset Manager
Consumer notification	Stakeholder Services Manager
Weekly savings reporting, revoking rolling outages, reporting to SO, reporting to media and public agencies	Network Development & Engineering Manager
Reporting to CDEM and Lifelines	Network Asset Manager

7.0 Communication with the System Operator

For commercial enquiries the SO can contact Waipa Networks at;

Waipa Networks Limited

Phone +64 7 872 0745
PO Box 505
Te Awamutu 3840
240 Harrison Drive
Te Awamutu 3800

The current CEO, Network Asset Manager and Field Services Supervisor direct contacts are listed in the Electrical Industry Emergency Contact List.

The Waipa Networks managerial and operational contact for this Participant Rolling Outage Plan is:

Pete Armstrong
Network Asset Manager
Mobile +64 27 502 8078
Phone +64 7 872 0745

Waipa has contracted its system operations to WEL Networks Ltd. For operational enquiries the SO can contact WEL Networks Control Centre at;

WEL Networks Limited
PO Box 925
Hamilton 3240
114 Maui Street
Te Rapa
Hamilton 3200

Control Centre (Maui Street, Te Rapa, Hamilton)
Fax +64 7 850 3213
Phone +64 7 850 3130

Disaster Recovery Site (Avalon Drive)
Mobile +64 27 499 5734 (in transition)
Phone +64 7 850 3130

Waipa will contact the System Operator for administration purposes and reporting performance against targets using the following details:

Email: system.operator@transpower.co.nz

8.0 Actions for Immediate Events

8.1 Grid Stability

The SO is required to keep enough reserve generation to cover the risk of the largest connected generator tripping. They are also required to keep the Grid frequency at 50Hz +/- 0.5Hz. If a large generator trips, it may cause a reduction in frequency, which if not rectified can result in other generators tripping and could lead to cascade failure of the transmission system.

As reserve generation cannot immediately pick up the load of a disconnected generator, an immediate load reduction is required until additional generation can pick up the load. Automatic load shedding groups reduce load in stages until the Grid frequency stabilises.

To recover from Immediate Events electricity consumption can be reduced by;

- Under-Frequency Relay Tripping of Controllable Load (Reserves Market),
- Disconnecting Consumers by Automatic Under-Frequency Load Shedding of Feeders,
- Managing Fonterra's seasonal load and Requesting Export Generation
- Manually Disconnecting Consumers by Shedding Feeders

8.2 Reserve Market

Generators and load users with interruptible load such as EDBs may offer in reserve capacity to cover the risk of the largest generating unit or a critical transmission line tripping. The ability to do this is affected by the numbers of frequency capable relays installed and the likely revenue stream from the market less the compliance costs of participating in the reserve market.

Waipa participates in the Fast Response Instantaneous Reserves Market and the Sustained Response Instantaneous Reserves Market through a Market Aggregator. Waipa has frequency capable relays that can offer up to 5MW of dis-connectable water heating load at Transpower's Cambridge GXP and up to 3MW of interruptible water heating load at Transpower's Te Awamutu GXP.

GXP	**Estimated percentage of average annual demand for interruptible load (MW)**
CBG0111	17%
TMU0111	13%

This interruptible load is continually available and can be used to alleviate an Immediate Event.

8.3 Disconnecting Consumers

8.3.1 Automatic Under-Frequency Load Shedding of Feeders

If the load shed by the Reserve Market tripping is insufficient to stabilise the Grid, further automatic load reduction is required.

Each EDB must (unless exempted) have available at all times two blocks of load each of 16% of its total load to be shed by automatic under-frequency relays.

In Waipa's case the Automatic Under-Frequency Load Shedding (AUFLS) relays are owned, operated and maintained by Transpower.

8.3.2 AUFLS Block 1

If the Grid frequency fails to recover after a Reserve Market load shed, AUFLS Block 1 shedding will occur. This will disconnect 16% of Waipa's network load by disconnecting feeders.

AUFLS Block 1 feeders at Transpower's Cambridge GXP are; Tamahere, French Pass and Pencarrow.

AUFLS Block 1 feeders at Transpower's Te Awamutu GXP are; Kawhia, Hairini and Mystery Creek.

8.3.3 AUFLS Block 2

If Block 1 tripping fails to restore frequency, Block 2 shedding will occur. This will disconnect a further 16% of Waipa's network load by disconnecting more feeders.

AUFLS Block 2 feeders at Transpower's Cambridge GXP are; Kaipaki, Monavale, Roto-O-Rangi and Cambridge North.

AUFLS Block 2 feeders at Transpower's Te Awamutu GXP are; Kiokio, Waikeria and Paterangi feeders.

8.3.4 Fonterra Seasonal Load

If the SO requests more load to be dropped, as a last resort, Fonterra's Hautapu and Te Awamutu dairy factories will be switched off if their seasonal load exists.

If the seasonal load is not present, the Control Centre will ask Fonterra Te Awamutu to generate in excess of their load requirement if it is safe to do so. Fonterra at times export from the Te Awamutu dairy factory so they have retailing arrangements in place to reconcile their exported electricity.

8.3.5 Manual Feeder Shedding – Following AUFLS Event

If Waipa's under-frequency relay tripping of controlled load and Transpower's AUFLS Block 1, Block 2 feeder tripping and fail to stabilise the Grid frequency the SO will shed more load.

Emergency load shedding feeders are listed below in order of importance (top feeders at each GXP to be switched off first, bottom feeders are to be switched of last);

Cambridge GXP feeders

- St Kilda
- Leamington
- Cambridge East
- Cambridge Town
- APL (open at G359C to shed APL only, retain supply to Ripple Plant)
- Hautapu A & Hautapu B

Te Awamutu GXP feeders

- Pokuru
- Pukeatua
- Pirongia
- Ohaupo
- Kihikihi
- Te Awamutu West
- Te Awamutu East
- Fonterra A & Fonterra B

Once the Grid frequency has stabilised the SO will advise the Control Centre when load can be restored.

8.3.6 Manual Feeder Shedding – Triggered by Grid Emergency

During a Grid Emergency, AUFLS feeders need to be retained in service in proportion to the remaining load off the GXP. Hence the feeder load shedding order should be followed to reduce load within the Grid Emergency GXP maximum demand targets.

Immediate actions to reduce demand are:

- Controllable hot water load to be shed at both GXPs and remain off until the Grid Emergency is over.
- Contact the Fonterra Te Awamutu Diary Factory Energy Centre (24 hour, 7 day contact 07 871 2350) and request if they have any additional capacity to increase the output of the co-generation unit. Fonterra have undertaken to respond with best endeavours if they are able.
- If the above reductions do not reduce load within the GXP maximum demand targets, commence manual load shedding as per the below.

Emergency load shedding feeders are listed below in order of importance. Feeders at each GXP are to be switched off in order from top to bottom, to reduce load to within the Grid Emergency GXP maximum demand target for each GXP:

Cambridge GXP feeders

- St Kilda
- Leamington
- Cambridge East
- Cambridge Town
- APL (open at G359C to shed APL only, retain supply to Ripple Plant)
- Hautapu A & Hautapu B

Te Awamutu GXP feeders

- Pokuru
- Pukeatua
- Pirongia
- Ohaupo
- Kihikihi
- Te Awamutu West
- Te Awamutu East
- Fonterra A & Fonterra B

Once the Grid Emergency is over the SO will advise the Control Centre when load can be restored, starting with feeders shed, then controllable hot water load. Once all Te Awamutu load is restored and the demand is stable, advise Fonterra Te Awamutu that they can return to normal co-generation operations.

8.3.7 Load Disconnection/Restoration Requirements

After receiving a direction from the System Operator Waipa Networks (via WEL Control) will use best endeavours to:

a) Not increase or decrease it's demand by more than 25 MW in any five minute period without the System Operator's prior approval. Given the relatively small size of Waipa Networks' total load and individual feeder loads, this limit is unlikely to be breached.
b) Minimise the impact on frequency and voltage stability. Given the relatively small size of Waipa Networks' total load and individual feeder loads, impacts on frequency and voltage are unlikely to be breached.
c) Minimise the disconnection and restoration of its demand during times when demand is typically ramping up or down in the region affected by the supply shortage (for example,

either side of morning and evening peaks). This will be considered in setting the timing of rolling outage plan actions.

8.4 Supply Restoration

Restoration of disconnected load must be restored in conjunction with the SO. This is to prevent overloading the Grid and Waipa's network and/or creating further Grid instability.

8.5 Transmission Grid Emergency

The SO may request Waipa to reduce load under a Grid Emergency notice (GEN). Waipa will shed all water heating load (approximately 5MW at Cambridge GXP and 6MW at Te Awamutu GXP) and inform the SO.

If more shedding is required, the SO will instruct Transpower to disconnect load as per the emergency load shedding feeders listed in Clause 8.3.6 of this PROP.

If a Developing Event is in place, the Grid Emergency will take precedence.

If the SO declares a supply shortage during a Grid Emergency, then Waipa will respond by invoking rolling outages in accordance with the following sections 11 to 19, after the Grid Emergency has been remedied.

9.0 Developing Events

If the SO requests a load reduction for a Developing Event, Waipa will reduce supply to meet the SO's weekly energy savings targets. To reduce energy use Waipa will disconnect feeders in a controlled manner to enable targets to be reached.

Waipa acknowledges there are financial penalties for not meeting the targets specified by the SO.

To avoid doubt, Waipa will not institute prolonged water heating cuts separate to shedding un-controlled load to achieve energy savings.

10.0 Declaration of a Developing Event

The SO will endeavour to provide 9 days prior notice of the requirement for weekly energy savings and any increase in the weekly savings target.

The SO will then specify the energy savings target to be enforced for a specific region for a specific time-frame.

The SO is responsible for general media advertising of the need to conserve electricity and the impending rolling outages when they are requested.

If Waipa plans to issue a pubic message related to rolling outages then this will be sent to the SO for review before being released. Any such communication will give a time for response from the SO, so as their feedback can be included before Waipa issues the message to the public.

Administrative communications (relating to supply shortage declarations, directions to save energy, acknowledgment of receipt of a direction to save energy, rolling outage monitoring, distributor load/load shedding forecasts, media/public communications) will be directed to:
Email: system.operator@transpower.co.nz
Ph: 04 590 7000

11.0 Criteria for Rolling Outages

Both of Waipa Network's GXPs will be included in rolling outages, as per the below:

GXP	Rolling outages may occur	Reasons why rolling outages will not occur
CBG0111	Yes	Not applicable
TMU0111	Yes	Not applicable

Waipa will use best endeavours to ensure public health and safety is preserved and costs to the economy are minimised. The following points have been noted when selecting feeders to be included in rolling outages:

- There are no major hospitals or international airports connected to Waipa's network.
- Waipa's main building has a standby generator.
- Waipa District Council has generation sufficient to run both their Cambridge and Te Awamutu offices and utility plant sites.
- Te Awamutu Police Station has a generator sufficient to keep communications and the building running during rolling outages. Cambridge Police station has been advised of the potential effects of rolling outages and that additional generation is recommended.
- All telecommunication major connections in the area have emergency generation.
- Waikeria Prison has emergency generation.
- Waipa will liaise with Fonterra to voluntarily reduce load in proportion with the SO energy saving targets in preference to rolling outages. As a last resort Waipa will include Fonterra in rolling outages. Waipa will endeavour to schedule Fonterra's Hautapu and Te Awamutu dairy factory outages at separate times.
- Where outages need to be increased above 4 hours, Waipa will attempt to keep rural areas on 4 hour outages if possible, so that dairy farms may get at least one milk in each day.
- Predominantly rural and residential feeders will be included in rolling outages prior to commercial feeders. Commercial feeders will be added if required savings levels rise to the point where this is necessary.
- To assist contingency planning for local consumers and businesses, Cambridge outages will occur from 8am till midday, while Te Awamutu outages will occur from midday till 4pm where possible.

Waipa Networks has no agreements with retailers or consumers on the distributor's network that may adversely affect the distributor's ability to comply with system operator directions related to rolling outage plans.

11.1 Vulnerable Consumers and Priority Sites

Waipa has interposed agreements with its Electricity Retailers and does not hold information about the locations or circumstances of vulnerable consumers and priority sites.

Therefore, Waipa is unable to prevent rolling outages affecting vulnerable consumers and priority sites.

To minimise disruption Waipa will;

- Provide information in it's public notices and website alerting vulnerable consumers and priority sites of impending rolling outages, and

- Request all Electricity Retailers to notify their vulnerable consumers and priority site consumers.

12.0 AUFLS under Rolling Outages

The EGRs (Part C Section III) require that the level of AUFLS at all times, including during rolling outages, needs to be maintained.

To achieve this Waipa will request Transpower (as owner, operator and maintainer the AUFLS relays) to arm additional feeders as soon as rolling outages are planned to supplement the AUFLS load and exclude these from the rolling outage plan. If it is not possible to arm additional feeders before it is necessary to respond as directed, Waipa will need to apply rolling outages to some high priority feeders to achieve savings targets while maintaining AUFLS.

13.0 Shutdown Notification

When implementing a rolling outage plan, Waipa will notify the outages in the following ways;

- Public notices,
- Waipa website, and
- Electricity Retailer notification.

13.1 Public Notices

Waipa will place public notice advertisements (see draft in Appendix B) providing a rolling outage timetable showing the times and areas affected by rolling outages. The advertisement will provide details of Waipa's website page for consumers that wish to seek more information.
Public notices would be promulgated through the;

- Cambridge Edition alice.cutler@fairfaxmedia.co.nz
- Cambridge News denise@cambridgenews.co.nz
  022 044 9102 or 07 827 0005
- NZ Herald newsdesk@nzherald.co.nz
- Te Awamutu Courier Editor@TeAwamutuCourier.co.nz
- Waikato Times News@WaikatoTimes.co.nz
- Waitomo Times Reception@WaitomoNews.co.nz

- Radio stations via The Radio Network and Media Works (email all contacts)

  Newstalk ZB news@newstalkzb.co.nz
  Radio NZ news@raidonz.co.nz
  Media Works news@newshub.co.nz
  Radio Network WaikatoNews@RadioNetwork.co.nz
  KayHale@RadioNetwork.co.nz
  DGrove@MediaWorks.co.nz

13.2 Waipa Website

Waipa will set up a dedicated website page which will show the rolling outage timetable.

13.3 Retailer Notification

Waipa will provide all Electricity Retailers the feeder rolling outage timetable and a schedule showing which feeder each ICP is connected to. This will assist retailers with consumers with identified health and safety issues.

Waipa will endeavour to provide 7 days notice of all rolling outage plans, generally publishing and issuing notifications on a Monday to apply from the following Monday.

14.0 Communication with System Operator

All communications with the SO will be between the WEL Control Centre and Transpower's Regional Operating Centre (North) using Transpower's telephone or normal communication systems.

Prior to notifying and implementing a rolling outage plan, Waipa will consult with the SO Security Coordinator to establish a process for shedding and restoration, which may include a MW load cap to operate under during restoration phases. Load shedding and restoration shall be no more than one feeder per GXP per 2.5 minutes per GXP unless otherwise agreed with the Network Asset Manager.

15.0 Grid Emergency during a Developing Event

If the SO declares a Grid Emergency during a Developing Event, the Grid Emergency will take priority.

As water heating load is not intended to be used to reduce load in a Developing Event, Waipa would have water heating load available for load reduction when required for the Grid Emergency. Once this load is shed, the SO will be advised. If more shedding is required the SO will instruct Transpower to disconnect load as per the list of emergency load shedding feeders in Clause 8.3.5 of this PROP.

After the Grid Emergency is cancelled by the SO the rolling outages pattern will resume.

16.0 Rolling Outages Strategy and Methodology

The Network Asset Manager will manage the overall strategy of Waipa's rolling outages which will include reviewing weekly targets and preparing plans for weekly rolling outages based on savings required.

Waipa's methodology (subject to percentage of energy savings requested by the SO) comprises;

- Classifying each of its feeders into rural, residential and commercial (excluding Fonterra),
- Prioritising rolling outages on rural feeders then residential feeders and lastly commercial feeders,
- Predetermining planned outage times,
- Maintaining AUFLS obligations,
- Load switching constraints, and
- Produce rolling outage plan.

Feeder Classification;

- Feeders classed as rural in Cambridge are; Kaipaki, Tamahere, French Pass, Pencarrow, Roto-O-Rangi and St Kilda.
- Feeders classed as rural in Te Awamutu are; Kawhia, Kiokio/Waikeria, Pirongia, Pukeatua, Paterangi, Mystery Creek, Ohaupo and Pokuru.
- Feeders classed as residential in Cambridge are; Leamington, Cambridge North, Cambridge East.
- Feeders classed as residential in Te Awamutu are; Te Awamutu West and Kihikihi.
- Cambridge's commercial feeder is Cambridge Town and Monavale (due to significant food processing load).
- Cambridge's industrial feeders are Hautapu A, Hautapu B and APL.
- Te Awamutu's commercial feeder is Te Awamutu East and Hairini (due to commercial/industrial area combined with residential).
- Te Awamutu's industrial feeders are Fonterra A and Fonterra B.

Prioritising Rolling Outages;

- Predominantly rural and residential feeders will be included in rolling outages prior to commercial feeders. Commercial feeders will be added if required savings levels rise to the point where this is necessary.

Predetermining Planned Outage Times;

- To assist contingency planning for local consumers and businesses, where possible Cambridge outages will occur from 8am till midday, while Te Awamutu outages will occur from midday till 4pm,
- Where planned outages need to be longer than four hours to achieve the energy saving requested by the SO, Waipa will endeavour to programme the outages during daylight hours, between 8am and 4pm.
- Fonterra have dedicated feeders at Cambridge GXP and Te Awamutu GXP. Waipa will endeavour to schedule Fonterra's Hautapu and Te Awamutu dairy factory site outages at separate times.

Maintaining AUFLS Obligations;

- The EGRs (Part C Section III) require that the level of AUFLS at all times, including during rolling outages, needs to be maintained,
- To achieve this Waipa will request Transpower (as owner, operator and maintainer the AUFLS relays) to arm additional feeders as soon as rolling outages are planned to supplement the AUFLS load and exclude these from the rolling outage plan.
- Rolling outages will only be applied to active AUFLS feeders to the extent that it is possible to continue to meet AUFLS obligations.

Load Switching Constraints;

- Unless advised otherwise by the SO, the rolling outages plan must provide sufficient time for switching of load to ensure that Waipa's load does not increase or decrease by more than 25MW in any 5-minute period as stipulated by the SO. The SO carrying out switching will monitor their activities in relation to this limit.
- The Control Centre will ensure that load shedding and restoration shall be no more than one feeder per GXP per 2.5 minutes unless otherwise agreed with the Network Asset Manager.
- If Waipa is unable to meet the load disconnection/restoration ramp rates for a valid operational reason, or if Waipa predicts there is likely to be a material departure (greater than 20%) from the previously provided half hourly GXP load forecast / load

profile, then Waipa will advise the SO to ensure that real time security issues can be managed.

Produce rolling outage plan;

- Having established the nine-day ahead rolling outage plan and despite significant uncertainty in predicting consumer behaviour during these types of events, Waipa will endeavour to produce a rolling nine-day ahead half hourly load prediction for each GXP provided on a daily basis. This will be updated daily to reflect any adjustments to Waipa's plan and forwarded to the SO in the format outlined below.

Date: (table for each of the next 7 days)		
Trading period	**Cambridge GXP**	**Te Awamutu GXP**
1	MW load	MW load
2	MW load	MW load
↓	MW load	MW load
48	MW load	MW load

Upon receipt of a direction from the System Operator to initiate rolling outages, an acknowledgement of receipt of that direction will be sent by WEL Control to the System Operator by e-mail.

Disconnection and restoration of demand in real time by WEL Control will be in accordance with the rolling outage plan and will remain within the load switching constraints identified above.

16.1 Indicative Rolling Outage Plans

Using the methodology outlined in Clause 16.0 above, Waipa's indicative plans for 5% - 25% energy savings are;

5% Savings Schedule			
Group	**Cuts per week**	**Cut Duration (h)**	**Weekly Savings (MWh)**
Rural	4	3.5	364
Residential	0	0	0
Commercial	0	0	0
			364
Average weekly winter volume			6,715
Estimated percentage savings			5.43%

10% Savings Schedule			
Group	**Cuts per week**	**Cut Duration (h)**	**Weekly Savings (MWh)**
Rural	5	4	522
Residential	4	4	143
Commercial	0	0	0
			665
Average weekly winter volume			6,715
Estimated percentage savings			9.9%

15% Savings Schedule			
Group	**Cuts per week**	**Cut Duration (h)**	**Weekly Savings (MWh)**
Rural	7	4	711
Residential	7	4	330
Commercial	0	0	0
			1,041
Average weekly winter volume			6,715
Estimated percentage savings			15.5%

20% Savings Schedule			
Group	**Cuts per week**	**Cut Duration (h)**	**Weekly Savings (MWh)**
Rural	7	4	711
Residential	4 3	4 8	470
Commercial	7	4	169
			1,350
Average weekly winter volume			6,715
Estimated percentage savings			20.1%

25% Savings Schedule			
Group	**Cuts per week**	**Cut Duration (h)**	**Weekly Savings (MWh)**

Rural	6	4x4h & 2x8h	831
Residential	6	8h	563
Commercial	6	8h	282
			1,676
Average weekly winter volume			6,715
Estimated percentage savings			24.9%

17.0 Target Monitoring

The Network Development and Engineering Manager will be responsible for daily and weekly reporting of consumption relative to target levels to the SO for operational purposes, and, to the SO for assessing compliance using Waipa's data sources.

To avoid discrepancy over the accuracy of different data sources, the SO will reconcile actual demand versus the target using actual market information not available to Waipa during these events.

For load shedding to a weekly target, Waipa's Network Development and Engineering Manager will monitor the SO report on Waipa's savings against target and in conjunction with the Network Asset Manager, review future load shedding to increase or decrease the amount of rolling outages to enable the weekly target to be met.

In the case of daily or real time limits where the SO reporting will be too slow for real time action to be taken, the Network Asset Manager in conjunction with the Network Development and Engineering Manager will monitor Waipa's savings and adjust accordingly in the timeframe required. These savings will be calculated using GXP loads measured by our SCADA system and compared with the targets supplied by the SO.

18.0 Log of Rolling Outages

The WEL Control Centre will enter in the Rolling Outage Log, times of disconnection and reconnection of all feeder interruptions. The log sheet to be used by the WEL Control Centre is shown in Appendix A.

19.0 Contingent Events

If any unplanned event outside of this PROP occurs that will alter planned rolling outages, the Control Centre will be responsible for all decisions. Where possible, any changes to the planned timetable should be published on Waipa's website and communicated to all Electricity Retailers.

20.0 Appendix A – Rolling Outage Log

GXP ____________________ DATE ____/____/________

TOTAL MW OFF ________ ON _________

FEEDER NAME	CIRCUIT BREAKER #	TIME OPENED	TIME CLOSED	INITIAL

21.0 Appendix B – Rolling Outage Public Notice (Draft)

Please read – your power supply may be affected

Electricity Supply Interruptions

Waipa Networks Ltd is required to reduce electricity consumption with rolling power outages across Cambridge, Te Awamutu and surrounding rural areas to meet a (5% or 10% or 15% or 20% or 25% delete amounts which do not apply) energy savings target set by the System Operator in response to the current energy crisis.

Voluntary savings have already helped to reduce the impact of rolling outages, and further savings may allow Waipa Networks to reduce these planned cuts further.

Outages will occur within the time periods shown below. Wherever possible, Waipa Networks will delay cuts and restore power early, **so please treat all lines as live.**

Waipa Networks has prioritised the feeders that will be turned off to minimise the inevitable disruption and cost to the community.

To find out the feeder for your connection, you can call your electricity retailer.

YOUR SAFETY AND PROTECTION

It is important to ensure you keep safe around electricity, even when it is turned off.

- Power may be restored at any time.
- Please ensure all appliances are turned off during power cuts, particularly ovens, cook tops and heaters.
- To prevent damage to computers and other electrical equipment please ensure that you turn the switch off at the wall prior to outages.

IS YOUR HEALTH RELIANT ON POWER?

If your health may be affected by these outages you need to make alternative arrangements, or contact your health care provider for assistance. Please note that telephones that rely on a mains supply may not operate during outages, so plan in advance.

All other electricity distribution networks are likely to have similar outages. If you are travelling, some traffic lights may not be working. Avoid using lifts during these power restrictions.

Feeder Area	Monday 30 June 2014	Tuesday 1 July 2014	Wednesday 2 July 2014	Thursday 4 July 2014	Friday 5 July 2014	Saturday 6 July 2014
Kaipaki Tamahere	8am-12pm		8am-12pm		8am-12pm	
French Pass Roto-O-Rangi		8am-12pm		8am-12pm		8am-12pm
Kawhia Kiokio Waikeria Pirongia Pukeatua Paterangi	12pm-4pm		12pm-4pm		12pm-4pm	
Kihikihi Mystery Creek Ohaupo Pokuru		12pm-4pm		12pm-4pm		12pm-4pm

(**Note: only general areas are listed, some nearby areas will be affected)**

Consumers on feeders other than those listed are not scheduled for rolling outages in this period.