

NETWORK TASMAN LIMITED
SECURITY OF SUPPLY
PARTICIPANT OUTAGE PLAN

Version 3

June 2017

TABLE OF CONTENTS

1.	INTRODUCTION	3
2.	PURPOSE	3
3.	DEFINITIONS	3
4.	BACKGROUND	4
5.	RANGE OF EVENTS	4
6.	NETWORK TASMAN STAFF RESPONSIBILITIES	5
7.	COMMUNICATION WITH THE SYSTEM OPERATOR	5
8.	ACTIONS FOR IMMEDIATE EVENTS	6
9.	DEVELOPING EVENTS	7
10.	DECLARATION OF DEVELOPING EVENT	7
11.	CRITERIA FOR ROLLING OUTAGES	8
12.	AUFLS UNDER ROLLING OUTAGES	9
13.	SHUTDOWN NOTIFICATION.....	9
14.	COMMUNICATION WITH SYSTEM OPERATOR.....	10
15.	GRID EMERGENCY DURING DEVELOPING EVENT OR IMMEDIATE EVENT	10
16.	ROLLING OUTAGES STRATEGY AND METHODOLOGY	10
17.	TARGET MONITORING:	14
18.	LOG OF ROLLING OUTAGES	14
19.	CONTINGENT EVENTS.....	14

APPENDIX A- ROLLING OUTAGE FEEDERS

APPENDIX B –ROLLING OUTAGE LOG

APPENDIX C-DRAFT ROLLING OUTAGE PUBLIC NOTICE

APPENDIX D-EMERGENCY FEEDER SHEDDING LIST

APPENDIX E-ROLLING OUTAGE CONFIGURATION SWITCHING SCHEDULE

1. INTRODUCTION

This plan was written to comply with the Electricity Industry Participation Code 2010, Part 9 Security of Supply.

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 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. PURPOSE

Under the Code, participant rolling outage plans (PROP) are required to specify the actions that would be taken to;

- a) be consistent with the system operator rolling outage plan; and
- b) comply with the requirements specified in the notice sent under clause 9.6(2)(a) of the code; and
- c) specify the actions that Network Tasman will take to achieve, or contribute to achieving, reductions in the consumption of electricity (including any target level of reduction of consumption of electricity in accordance with criteria, methodologies, and principles specified on the system operator rolling outage plan) to comply with a direction from the system operator.

Reducing demand by disconnecting supply to customers would be a last resort after all other forms of savings including voluntary savings had been exhausted. Network Tasman will always endeavour to keep supply on to customers.

3. DEFINITIONS

Act	Electricity Industry Act 2010
AUFLS	Automatic Under Frequency Load Shedding
The Authority	Electricity Authority
Code	Electricity Industry Participation Code 2010
Feeder	A high voltage supply line typically supplying between 100 and 2000 consumers
GXP	Transpower Grid Exit Point
GEN	Grid Emergency Notice
PROP	Participant Rolling Outage Plan (this plan)
Regulations	Electricity Governance (Security of Supply) Regulations 2008 and Electricity Governance (Security of Supply) Amendment Regulations 2009.

Rolling Outages	Planned electricity disconnections spread over different parts of the network at differing times to avoid prolonged outages at any one location.
Security Coordinator	Person responsible for system security at the System Operator.
SOROP	System Operator Rolling Outage Plan
Supply Shortage Declaration	Declaration made by the System Operator under part 9 of the Code.
System Operator	Operator of the national electricity transmission grid

4. BACKGROUND

4.1 Electricity Authority

The Electricity Authority is a Crown entity set up under the Electricity Act to oversee New Zealand’s electricity market.

Core functions of the Authority are to:

- Make and administer the Electricity Industry Participation Code 2010 (Code) governing the New Zealand electricity market;
- Monitor and enforce compliance with the Code, various regulations, and the Act;

4.2 Transpower

Transpower is a State Owned Enterprise, tasked with owning and operating New Zealand’s national grid – the network of high voltage transmission lines and substations that transports bulk electricity from where it is generated to distribution line companies such as Network Tasman.

As System Operator, Transpower manages the real-time operation of New Zealand’s electricity transmission system. It keeps the right amount of energy flowing to match generated supply with demand.

4.3 Network Tasman

Network Tasman is the electricity network company that owns and maintains the electricity lines and cables that deliver power to the Nelson and Tasman districts.

5. RANGE OF EVENTS

Events that could lead the System Operator to make a Supply Shortage Declaration can in general terms be categorised as:

- Category A Developing Event – Events that evolve over time, for example low hydro lake or fuel levels.
- Category B Immediate Events – Events that occur with little or no warning, usually as a result of a transmission line or major generation failure.

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

Communication with retailers, civil defence, media and public relations will be managed as per the public and media communications procedures described in Network Tasman's Disaster Recovery and Response Plan.

6. NETWORK TASMAN STAFF RESPONSIBILITIES

ROLE	NETWORK TASMAN PERSONNEL
Receive communication from System Operator	CEO or Network Manager
Receive communication from System Operator	Control Centre
Implement this plan	Operations Manager
Preparation of load shedding schedules	Control Centre
Customer notification	Control Centre
Weekly savings reporting	Commercial Analyst
Revoking rolling outages	Network Manager
Reporting to System Operator	Network Manager
Reporting to media, public agencies	CEO or Network Manager
Reporting to CDEM and Lifelines	Operations Manager

Staff contact details are as follows:

ROLE	INCUMBENT	DDI	CELLPHONE
CEO	Oliver Kearney	03 989 3622	027 734 0209
Network Manager	Murray Hendrickson	03 989 3610	021 229 4722
Operations Manager	Robert Derks	03 989 3613	021 345 454

7. COMMUNICATION WITH THE SYSTEM OPERATOR

The System Operator can contact Network Tasman using the following details:

Network Tasman Ltd
 PH +64 3 989 3600
 FAX +64 3 989 3631
 PO Box 3005 Richmond 7031.
 52 Main Road Hope, Nelson.

Network Tasman will contact the System Operator for administration purposes (including reporting performance against targets) using the following details:

Transpower System Operator
 FAX: 04 498 2671
 PH: 04 495 7000

PO Box 1021
 96 The Terrace
 WELLINGTON

RCS
 PH: 03 349 7043
 FAX: 03 349 8506
 TSX: 37 7905
 Islington
 Christchurch

8. ACTIONS FOR IMMEDIATE EVENTS (CATEGORY B)

8.1 System Stability

Transpower, as the System Operator, is required to keep enough reserve generation to cover the risk of the largest connected generator tripping. They are also required to keep the system frequency at 50Hz. 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 pickup the load of a generator disconnected due to reduced frequency, an immediate load reduction is required until additional generation can pick up load. Automatic load shedding groups reduce load in stages until the frequency stabilises.

8.2 Reserve Market

Generators and load users with interruptible load such as distribution networks 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. Network Tasman does not presently participate in this market.

8.2.1 Disconnecting Customers

8.2.1.1 Automatic Under Frequency Load Shedding (AUFLS)

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

Each distribution network company must unless exempted have available at all times two blocks of load each 16% of its total load to be shed by automatic under frequency relays.

8.2.1.2 AUFLS Zone 1

If the system frequency fails to recover after Reserve Market load shed. AUFLS Zone 1 shedding will occur by disconnecting customers supply. In the Network Tasman network some of the tripping relays are owned by Transpower and whole zone substations are tripped. AUFLS feeders are listed in Appendix E.

8.2.1.3 AUFLS Zone 2

If zone 1 tripping fails to restore frequency, the next stage, zone 2 activates. This will disconnect a further 16% of Network Tasman's network.

8.2.1.4 Manual Shedding

If AUFLS Zone 1 and Zone 2 tripping fails to stabilise frequency the System Operator will shed more load. Emergency load shedding feeders are listed in Appendix D.

Once the frequency has stabilised the System Operator will advise Network Tasman Control Centre when load can be restored.

8.3 Supply Restoration

Restoration of disconnected load must be restored in conjunction with the System Operator. This is to prevent overloading the transmission grid and/or creating further instability.

8.4 Transmission Grid Emergency

The System Operator may request Network Tasman to reduce load under a grid emergency notice (GEN). Network Tasman will shed all water heating load, the System Operator will be advised and if more shedding is required the System Operator will instruct the Grid Owner to disconnect load as per the emergency load shedding feeders listed in Appendix F.

If an Immediate Event is in place, the grid emergency will take precedence.

If the System Operator directs rolling outages following a Grid Emergency, then Network Tasman will respond by implementing rolling outages as described in sections 9 to 19.

9. DEVELOPING EVENTS (CATEGORY A)

If the System Operator requests a load reduction in order to manage a developing situation or planned event, Network Tasman must reduce supply to meet the System Operator targets. The targets are likely to be in the form of a weekly energy savings target that is reviewed each week. To reduce energy usage Network Tasman would firstly restrict water heating service hours to night only (11pm to 7am) as a primary means of reducing energy consumption. Restriction of water heating hours to night only will result in many consumers running out of hot water on a daily basis.

In addition to this and as necessary, Network Tasman would commence disconnecting feeders (rolling outage feeders) in a controlled manner to enable targets to be reached. Water heating service restrictions to night only hours would continue through the rolling outages. With water heating being switched off during rolling outages, overload issues during restoration of rolling outage feeders are avoided.

Network Tasman has a legal obligation to comply with the System Operator targets.

10. DECLARATION OF A DEVELOPING EVENT

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

To declare a Category A event the System Operator will specify the energy savings target to be enforced for a specific region for a specified time-frame.

The System Operator is responsible for general media advertising of the need to conserve electricity and the impending rolling outages when they are requested if a Public Conservation Campaign has been declared in accordance with the Code.

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

On receipt of a declaration of a Category A event, Network Tasman will update Appendix A with current load data.

11. CRITERIA FOR ROLLING OUTAGES

To ensure public health and safety is preserved and costs to the economy are minimised the following table shows a desired criteria for selecting rolling outage feeders to be included in rolling outages.

11.1 Table 1 PRIORITY LOADS

Priority	Priority Concern	Maintain Supply to:	Examples
1	Public Health and Safety	Major Hospitals, air traffic control centres and emergency operation centres.	Hospitals Airport Major Police Stations. LTA Main Offices NTL Main Building
2	Important Public Services	Energy control centres, communications network, water and sewerage pumping, fuel delivery systems and major port.	Telecom major connections Major Malls Rural fire and police stations Port Nelson
3	Public Health and Safety	Minor Hospitals, medical centres, schools and street lighting	Dental Medical Schools Colleges Prisons
4	Food Production	Dairy farms and milk production facilities	Irrigation Rural Farms Dairy Factories
5	Domestic Production	Commercial and industrial premises	Business Connections
6	Disruption to consumers	Residential premises.	All residential connections Churches

Rolling outage feeders will all contain a variety of customers. The priority for each rolling outage feeder will be based on the priority ratings assessed from the connections within each feeder, according to the following:

Priority 1	Any feeder that has one or more priority 1 connections
Priority 2	Any feeder that has three or more priority 2 connections
Priority 3	All feeders that have an average priority ≥ 2.5 and < 3.5
Priority 4	All feeders that have an average priority ≥ 3.5 and < 4.5
Priority 5	All feeders that have an average priority ≥ 4.5 and < 5.5
Priority 6	All feeders that have an average priority ≥ 5.5

Rolling outage plans will focus on highest priority feeders (low criticality loads) to the extent possible, and the lower priority feeders being selected only at the higher required savings levels. Rolling outage feeders with the same priority and in the same area (according to our network supply regions) are grouped together into rolling outage groups. This level of grouping simplifies the planning, management and notification of rolling outages. The areas (Supply Regions for rolling outages) are:

A	Stoke
B	Motueka
C	Motupipi
D	Kikiwa
E	Murchison

For example, group A6 refers to all rolling outages in the Stoke Supply Region with a priority of 6.

11.2 Vulnerable Customers and Priority Sites

It is not possible for Network Tasman to prevent rolling outages affecting individual vulnerable customers and priority sites. In addition to the prioritisation of rolling outage feeders, Network Tasman will:

- Provide information in its public notices and website alerting vulnerable customers of the risks, and
- Request that retailers consider individually notifying their vulnerable customers.

12. AUFLS UNDER ROLLING OUTAGES

The AUFLS tripping at Network Tasman is effected at Grid Exit Point substation sub-transmission feeder level in some areas and at zone substation feeder level in others. Frequency sensitive relays detect reduced frequency under extreme conditions and act to trip these bulk supply feeder circuit breakers. In many cases these circuit breakers supply entire Network Tasman zone substations. Arming and dis-arming of AUFLS tripping on a circuit breaker can be undertaken remotely via Network Tasman or Transpower SCADA.

Under this scenario it is not generally possible to exclude rolling outage 11kV distribution feeders from AUFLS tripping.

The level of AUFLS during rolling outages needs to be maintained. Network Tasman will include AUFLS feeder shedding in its rolling outage plan and arm additional feeders if required to supplement the AUFLS load to ensure that two AUFLS blocks of 16% are maintained at all times.

13. SHUTDOWN NOTIFICATION

With the wide scale impact of rolling outages it is not feasible to use our standard planned outage notification process (mainly because retail and postal systems could not process the very high numbers of outage notifications required).

When implementing a rolling outage plan, Network Tasman will notify the outages in a number of ways:

- Public notices – Network Tasman will place public notice advertisements (see draft in Appendix C) providing a rolling outage timetable showing the times and areas affected by rolling outages. The advertisement will provide details of our website page for customers that wish to seek more information.

- Network Tasman website – a dedicated website page will be set up which shows the rolling outage timetable and allows customers to type in their ICP number to establish which rolling outage feeder they belong to.
- Retailer notification – Network Tasman will provide the rolling average timetable to all electricity retailers together with a schedule showing the rolling outage group for all ICP's as this places switching ICP's at risk).

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

14. COMMUNICATION WITH SYSTEM OPERATOR

All communications with the System Operator will be between Network Tasman's Control Centre and Transpower's Regional Control Centre (South) using Transpower's TSX telephone or normal communications systems.

Prior to notifying and implementing a rolling outage plan, Network Tasman will consult with the System Operator Security Coordinator to establish a process for shedding and restoration, which may include a MW load cap to operate under during restoration phases. Unless agreed otherwise with the System Operator, load shedding and restoration shall be no more than 10MW per 5 minutes.

15. GRID EMERGENCY DURING DEVELOPING EVENT OR IMMEDIATE EVENT

If the System Operator declares a grid emergency during a Developing Event or an Immediate Event, the grid emergency will take priority.

As water heating load would generally already have been shed in a Developing Event or an Immediate Event, Network Tasman may not have water heating load available for load reduction when required for grid emergency. The System Operator would be advised when all controllable load had been shed and if more shedding was required the System Operator will instruct the Grid Owner to disconnect load as per the list of emergency load shedding feeders in Appendix D.

After the grid emergency is cancelled, the rolling outages would continue.

16. ROLLING OUTAGES STRATEGY AND METHODOLOGY

The Network Manager, Commercial Manager, Operations Manger and Control Centre Manager will review weekly targets and prepare plans for weekly rolling outages based on savings required.

The methodology is:

1. Undertake switching to re-configure the network for rolling outages. This switching causes important loads to be removed from high priority feeders as far as is practicable. Refer Appendix E for Switching schedule.
2. Assign “Rolling Outage Feeders” (generally all distribution feeders exiting zone substations).
3. Prioritise Rolling outage feeders according to the criteria specified in section 9. Group together Rolling outage feeders in the same GXP area with the same priority for switching.
4. Estimate morning (8am to 12pm) and an afternoon (1pm to 5pm) average energy volumes for each group, based on the average daytime loadings for the season. This to be completed for week days and weekend days.
5. Consider and select rolling outage strategy to target the required savings level, taking into account the season and any under or over savings carried forward from earlier periods in the security of supply outage plan. Rolling outage plan strategy options to be selected depending on the saving level required, priority groups to be involved and appropriate daily feeder outage duration, as per Table 2 below.
6. Prepare switching instructions for each rolling outage priority group.

Table 2: ROLLING OUTAGE STRATEGIES

Overall Weekly Energy Savings Target	Priority Groups Used in Rolling Outage Plan	8am to 5pm Weekly Savings Required for Groups involved	Feeder Outage Hours per Day
0 to 5%	6 and 5	0 to 38%	0 to 4
0 to 10%	6,5,4 and 3	0 to 38%	0 to 6
0 to 15%	6,5,4, and 3	0 to 56%	0 to 6
0 to 20%	6,5,4,3 and 2	0 to 49%	0 to 7
0 to 25%	All Groups	0 to 59%	0 to 7

To the extent possible, outages would be programmed to be held during daylight hours ie between 8am and 5pm only. This would be extended into the evening hours only where necessary to achieve the actual daily required savings level or to accommodate switching logistics.

Unless advised otherwise by the System Operator, the rolling outage plan must ensure that Network Tasman’s load does not increase or decrease by more than 10MW in any 5 minute period. The Controllers carrying out switching are to monitor their activities in relation to this limit. With water heating switched off during rolling outage feeder switching however, high restoration loadings due to storage load effects are not expected to occur.

Having established the week ahead rolling outage plan and in light of the significant uncertainty in predicting customer behaviour during these types of events, Network Tasman will each day produce a rolling week ahead half hourly load for each GXP. This will be updated to reflect any adjustments to our plan and forwarded to the System Operator in the format outlined below:

Date:			
Trading Period	GXP Name	GXP Name	GXP Name
1	MW Load	MW Load	MW Load
2	MW Load	MW Load	MW Load
	MW Load	MW Load	MW Load
48	MW Load	MW Load	MW Load

If Network Tasman is unable for any reason to meet the load disconnection or restoration ramp rates, or if there is expected to be a material departure (greater than 20%) from the previously provided half hourly GXP load forecast/load profile, then Network Tasman would communicate directly with the System Operator (ie the Security Coordinator) to ensure that real time security issues can be managed.

Using the above methodology, indicative plans for savings are:

5% Savings Plan

Group	Cuts per Week	Cut Duration	Weekly Savings (MWh)
6	7	4	378.89
5	7	3	234.49
4	0	0	0
3	0	0	0
2	0	0	0
1	0	0	0
Total Savings			613.38
Average Weekly Volume			12,057.69
Percentage Savings			5.1%

10% Savings Plan

Group	Cuts per Week	Cut Duration	Weekly Savings (MWh)
6	7	6	568.34
5	7	3	234.49
4	7	3	410.35
3	0	0	0
2	0	0	0
1	0	0	0
Total Savings			1,213.17
Average Weekly Volume			12,057.69
Percentage Savings			10.1%

15% Savings Plan

Group	Cuts per Week	Cut Duration	Weekly Savings (MWh)
6	7	6	568.34
5	7	5	390.81
4	7	5	683.92
3	7	3	185.63
2	0	0	0
1	0	0	0
Total Savings			1,828.70
Average Weekly Volume			12,057.69
Percentage Savings			15.2%

20% Savings Plan

Group	Cuts per Week	Cut Duration	Weekly Savings (MWh)
6	7	7	663.06
5	7	5	390.81
4	7	5	683.92
3	7	4	247.51
2	7	3	540.58
1	0	0	0
Total Savings			2,525.88
Average Weekly Volume			12,057.69
Percentage Savings			20.9%

25% Savings Plan

Group	Cuts per Week	Cut Duration	Weekly Savings (MWh)
6	7	7	663.06
5	7	7	547.13
4	7	6	820.70
3	7	5	309.39
2	7	4	720.78
1	0	0	0
Total Savings			3,061.06
Average Weekly Volume			12,057.69
Percentage Savings			25.4%

The rolling outages strategy assumes that it is feasible to arm additional feeders for AUFLS purposes. If this is not feasible for some reason, the 5%-25% savings targets may need to be met by rolling outages across some higher priority feeders and for longer durations than provided in the indicative savings plans.

17. TARGET MONITORING:

To avoid discrepancy over the accuracy of different data sources, the System Operator will report on actual demand versus the target.

For load shedding to a weekly target the Commercial Analyst will monitor the System Operator will report of our savings results to our target and together with the Commercial or Operations Manager, review future load shedding to increase or decrease amount of rolling outages to enable the weekly target to be met. In parallel (as a check) with the System Operator, the Commercial Analyst will be responsible for daily and weekly reporting of consumption relative to target levels (using our data sources). As part of the monitoring process Network Tasman is required to report compliance on a daily basis to the System Operator.

In the case of daily or real time limits where the System Operator reporting will be too slow for real time action to be taken, the Operations Manager with the assistance of the Commercial Analyst will monitor our 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 system operator.

18. LOG OF ROLLING OUTAGES

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

19. CONTINGENT EVENTS

If an unplanned event occurs that will alter planned rolling outages, the Control Centre Manager will be responsible for all decisions. Where possible, any changes to the planned timetable should be published on Network Tasman's website and communicated to retailers.

APPENDIX A - ROLLING OUTAGE FEEDERS

FEEDER	Type	Category	Key Loads	Supply Region	Priority	Daily Average 8am-5pm MWh	Approx % Total Load
Aldinga	Urban	Residential		A	6	7.127	0.98%
Atawhai	Urban	Residential		A	6	14.967	2.07%
Bateup Road	Urban	Residential		A	6	13.542	1.87%
King St	Urban	Residential		A	6	7.840	1.08%
Moana	Urban	Residential		A	6	16.838	2.32%
Monaco	Urban	Residential		A	6	12.294	1.70%
Polstead	Urban	Residential		A	6	10.424	1.44%
Saxton East	Urban	Residential		A	6	6.147	0.85%
Stoke	Urban	Residential		A	6	11.582	1.60%
Wakatu	Urban	Residential		A	6	11.404	1.57%
Waverley St	Urban	Residential		A	6	9.622	1.33%
Airport	Urban	Industrial	Quarantine Rd Industries	A	5	9.265	1.28%
Akersten	Urban	Industrial		A	5	4.098	0.57%
Bishopdale	Urban	Residential	Bishopdale Shops	A	5	6.593	0.91%
Main Rd	Urban	Commercial		A	5	14.254	1.97%
Mapua	Rural	Commercial		A	5	12.027	1.66%
Tahuna	Urban	Commercial		A	5	15.858	2.19%
Kaiteriteri	Rural	Commercial	Central Riwaka, Kaiteriteri	B	5	11.404	1.57%
Pah St	Urban	Residential		B	5	15.680	2.16%
Pohara	Rural	Commercial		C	5	7.394	1.02%
Rotoiti	Rural	Farming	St Arnaud	D	5	3.920	0.54%
Higgins Rd	Rural	Farming	Wakefield CBD	A	4	7.840	1.08%
Hira	Rural	Farming		A	4	16.927	2.34%
Mahana	Rural	Farming		A	4	4.187	0.58%
Pascoe St	Urban	Industrial		A	4	19.244	2.66%
Redwoods Valley	Rural	Farming		A	4	5.613	0.77%
Spring Grove	Rural	Farming		A	4	12.384	1.71%
Waimea East	Rural	Farming		A	4	11.760	1.62%

Waimea West	Rural	Farming		A	4	6.415	0.89%
Brooklyn	Rural	Farming		B	4	11.314	1.56%
Dovedale A	Rural	Farming		B	4	5.435	0.75%
Dovedale B	Rural	Farming		B	4	5.435	0.75%
Tasman	Rural	Farming		B	4	7.662	1.06%
Upper Moutere	Rural	Farming		B	4	8.285	1.14%
Pakawau	Rural	Farming		C	4	6.147	0.85%
Rockville	Rural	Farming		C	4	5.880	0.81%
Upper Takaka	Rural	Farming		C	4	8.374	1.16%
Waitapu	Rural	Farming	Dairy Factory, High school	C	4	9.533	1.32%
Kohatu	Rural	Commercial	Central Tapawera	D	4	8.196	1.13%
Korere	Rural	Farming		D	4	4.365	0.60%
Longford	Rural	Farming		E	4	3.475	0.48%
Maruia	Rural	Farming		E	4	7.394	1.02%
Champion Rd	Urban	Residential	Garin College	A	3	14.700	2.03%
Darcy St	Urban	Residential	Waimea College/Int	A	3	9.800	1.35%
Ellis St	Rural	Commercial	Dairy Factory	A	3	13.007	1.80%
Lower Queen St	Rural	Commercial	Oakwoods/Water Pumps	A	3	6.058	0.84%
Nayland	Urban	Residential	Nayland College	A	3	13.274	1.83%
Wildman Rd	Urban	Industrial	Talleys Fisheries	B	3	15.145	2.09%
Commercial St	Rural	Commercial	Central Takaka	C	3	3.831	0.53%
Murchison	Rural	Commercial	Area School	E	3	3.742	0.52%
Appleby	Rural	Farming	Bells Is Regional Sewerage	A	2	10.245	1.41%
Beach Road	Urban	Industrial	Regional Sewerage Pump	A	2	10.334	1.43%
Eves Valley	Industrial	Industrial	Eves Valley Sawmill	A	2	17.572	2.43%
Isel	Urban	Commercial	Stoke CBD	A	2	8.464	1.17%
McGlashen Ave	Urban	Industrial	Richmond CBD	A	2	13.007	1.80%
MDF	Industrial	Industrial	Nelson Pine Industries	A	2	110.226	15.22%
Saxton West	Urban	Industrial	Regional Sewerage Pump	A	2	15.591	2.15%
Talbot St	Urban	Commercial	Richmond Mall	A	2	11.938	1.65%
Queen Victoria	Urban	Commercial	Motueka CBD	B	2	18.353	2.53%
Whakarewa	Urban	Commercial	Motueka CBD, High School	B	2	15.947	2.20%
Bolt Rd	Urban	Industrial	Airport,Regional Sewerage	A	1	14.878	2.05%
						724.258	100.00%

APPENDIX B - ROLLING OUTAGE LOG

SUBSTATION _____ **DATE** _____

TOTAL MW OFF _____ **ON** _____

CIRCUIT BREAKER NAME	CIRCUIT BREAKER #	TIME OPENED	TIME CLOSED	

APPENDIX C - DRAFT ROLLING OUTAGE PUBLIC NOTICE

Electricity Supply Interruptions

Please read - your supply may be affected

Network Tasman is being required to reduce electricity consumption with rolling power outages across Nelson and Tasman Districts to meet a 5% savings target set by the National Grid Operator in response to the current energy crisis.

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

Outages will occur within the time periods noted in the schedule below. Wherever possible, we will delay cuts and restore power early, so **please treat all lines as live**.

Within each area we have prioritised individual circuits to minimise the cost and disruption to our community, and timed outages accordingly. To find out the priority group of the circuit for your connection, you can enter your ICP number (from your power account) in the *connection details search* screen on our website (networktasman.co.nz), or call your electricity retailer.

YOUR SAFETY AND PROTECTION

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

- Power may be restored at any time.
- Please leave all appliances off during power cuts, particularly ovens and cook tops.
- To prevent damage to computers and other electrical equipment turn power off at the wall prior to outages.

Are you reliant on power ... If your health may be affected by these outages you will 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.

Traffic lights will be affected by these outages, so please avoid travelling in the affected areas if possible. Avoid using lifts.

Rolling Outage Feeder	Monday 4 July 2015	Tuesday 5 July 2015	Wednesday 6 July 2015	Thursday 7 July 2015	Friday 8 July 2015
Aldinga	8am – 10am	3pm – 5pm	1pm -3pm	10am – 12pm	8am – 10am
Atawhai	8am – 10am	3pm – 5pm	1pm -3pm	10am – 12pm	8am – 10am
Bateup Road	8am – 10am	3pm – 5pm	1pm -3pm	10am – 12pm	8am – 10am
Darcy St	10am – 12pm	8am – 10am	3pm – 5pm	1pm -3pm	10am – 12pm
King St	10am – 12pm	8am – 10am	3pm – 5pm	1pm -3pm	10am – 12pm
Moana	10am – 12pm	8am – 10am	3pm – 5pm	1pm -3pm	10am – 12pm
Monaco	1pm -3pm	10am – 12pm	8am – 10am	3pm – 5pm	1pm -3pm
Polstead	1pm -3pm	10am – 12pm	8am – 10am	3pm – 5pm	1pm -3pm

Saxton East	1pm -3pm	10am – 12pm	8am – 10am	3pm – 5pm	1pm -3pm
Stoke Central	3pm – 5pm	1pm -3pm	10am – 12pm	8am – 10am	3pm – 5pm
Wakatu	3pm – 5pm	1pm -3pm	10am – 12pm	8am – 10am	3pm – 5pm
Waverley St	3pm – 5pm	1pm -3pm	10am – 12pm	8am – 10am	3pm – 5pm

Connections in priority groups other than those listed (and those with a "reserved" priority) are not scheduled for rolling.

APPENDIX D - EMERGENCY FEEDER SHEDDING LIST

NETWORK TASMAN TRANSPOWER FEEDER SHED PRIORITY

Transpower CB	Feeder	Typical Summer Daytime Load (MW)	Typical Winter Daytime Load (MW)	Load Type	Overall Network Tasman Shed Priority	GXP Shed Priority	AUFLS Zone	Transpower Grid Emergency Grouping Single GXP	Transpower Grid Emergency Grouping All GXP
Murchison CB37	Murchison 11kV	0.9	1.5	Rural	1	1	NA	1	1
Kikiwa CB37	Kikiwa 11kV	2.0	1.5	Rural	2	1	NA	1	1
Stoke CB2152	Railway Reserve 33kV	5.5	7.0	Industrial/Residential	3	1	2	1	1
Stoke CB2182	Nelson Nth A 33kV	3.0	4.0	Industrial/Residential	4	2	2	1	2
Stoke CB2142	Suffolk Road 33kV	17.0	17.0	Industrial	5	3	NA	1	2
Stoke CB2462	Hope 33kV	6.0	10.0	Industrial/Residential	6	4	1	2	3
Stoke CB92 ^{3,4}	Stoke-Upper Takaka 66kV	7.5	10.0	Industrial/Residential/Rural	7	1	1,2	1	3
Stoke CB102 ^{3,4}	Stoke-Cobb 66kV	7.5	10.0	Industrial/Residential/Rural	8	2	1,2	1	3
Stoke CB2172	Richmond 33kV	7.0	12.0	Industrial/Residential	9	5	2	2	4
Stoke CB2432	Annesbrook 33kV	10.0	14.0	Industrial/Residential	10	6	1	2	4
Stoke CB2222	Songer St B 33kV	9.0	14.0	Industrial/Residential/Critical	11	7	NA	3	4
Stoke CB2362 ⁵	Ridgeway W/Rutherford 33kV	4.0	6.0	Industrial/Residential/Critical	12	8	NA	4	5
Stoke CB2232 ⁵	Ridgeway E/Vanguard 33kV	4.0	6.0	Industrial/Residential/Critical	13	9	NA	4	5
Stoke CB2452 ⁵	York/Vincent 33kV	4.0	6.0	Industrial/Residential/Critical	14	10	NA	4	5
Stoke CB2162 ⁵	Waimea Road 33kV	6.5	10.0	Industrial/Residential/Critical	15	11	NA	4	5

NOTE:

1. Priority 1 means first to be shed and last to be restored
2. If requiring reduction in Network Tasman overall load use Overall Network Tasman shed priority. If requiring reduction in particular GXP load use GXP shed priority.
3. Stoke CB92 and Stoke CB102 normally operate in parallel, therefore no load reduction will occur until both CB's are opened.
4. Stoke CB92 and Stoke CB102 connect Cobb Power station (32MW) to the grid.
5. Stoke CB2362, Stoke CB2232, Stoke CB2452 and Stoke CB2162 normally supply paralleled circuits, therefore no load reduction will occur until all four of these CB's are opened.

APPENDIX E – ROLLING OUTAGE CONFIGURATION SWITCHING SCHEDULE

Load Shifted	Normal Feeder	Rolling Outages Feeder	Switch Action 1	Switch Action 2
Stoke CBD	Nayland	Isel	Close ABS603	Open ABS602
Monaco and Airport Sewerage	Monaco	Bolt Road	Close AND2543	Open HAZE1720
Brightwater Dairy Factory	Waimea East	Ellis St	Close ABS20	Open ABS19