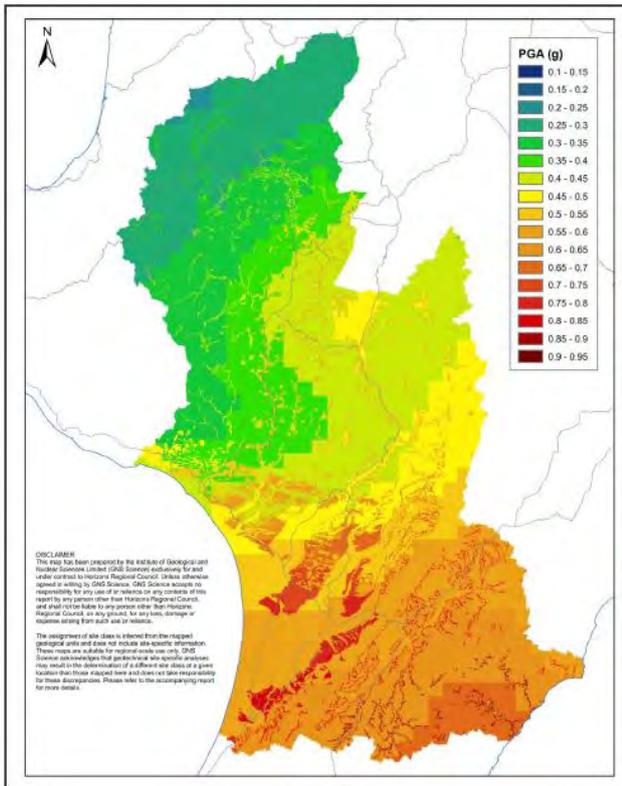


# Manawatū-Whanganui Lifelines Project

## Generator Plan



24 June 2020

<https://www.hireways.co.nz/generators/light-towers>



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## Approved by:



Brendan Morris, Director.

## Issued: 24 June 2020

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## QUICK START GUIDE FOR IMMEDIATE RESPONSE

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**In the event of a major earthquake or other significant event causing widespread loss of power:**

**Initiate 'Quick Start Guide' actions from the Lifelines Initial Earthquake Response Plan (summarised below)**

**Establish Lifelines Utilities Coordinator (LUC) role in the Group Emergency Coordination Centre as soon as possible.**

**LUCs are to use the following guidance in response:**

1. Start and continue initial response actions per **Section 3.2.2** of the Lifelines Initial Earthquake Response Plan (**refer to copy in Appendix 2 of this plan**)
2. Review primary response coordination considerations per **Section 3.4** of the Lifelines Initial Earthquake Response Plan (**refer to copy in Appendix 2 of this plan**)
3. Initiate contact with lifeline utilities using latest Manawatu-Whanganui Lifelines Advisory Group contact list
4. Follow post-event LUC actions in **Section 5.1** of this plan
5. Follow remainder of Quick Start Guide within the Lifelines Initial Earthquake Response Plan.

**Lifeline utilities are to use the following guidance in response:**

1. Start initial response actions per **Section 3.2.3** of the Lifelines Initial Earthquake Response Plan (**refer to copy in Appendix 2 of this plan**)
2. Use the '**MW LAG Generators 2020**' spread sheet (MW Region Commercial Generators tab) to begin locally sourcing generators (as communication links allow) and **Section 4.1** of this plan to begin sourcing out-of-region generator stock
3. Follow remainder of Quick Start Guide within the Lifelines Initial Earthquake Response Plan.

# 1 INTRODUCTION

## 1.1 Purpose and expected outcome

The purpose of this plan is to:

- Confirm the baseline level of generator use for lifelines utilities within the Manawatū-Whanganui (MW) Region
- Confirm the level of commercially available generators within the M-W region
- Identify the likely post-event requirements for lifelines utilities and identify any shortfalls in capacity
- Provide guidance on managing post-event requirements.

The expected outcome of this plan is simple, clear arrangements that provide confidence that the MW Civil Defence Emergency Management (CDEM) Group has a fundamental understanding of regional generator use, commercial generator availability, potential shortfalls in capacity and initial coordination arrangements when a significant emergency occurs.

## 1.2 Background

While developing the CDEM Group Regional Fuel Plan in 2018, it became evident that only a limited number of fuel outlets have backup power supply and the ability for 'plug in' generator capacity. The majority of outlets in the region have neither. This raised a broader question about the state of preparedness of regional lifelines utilities in terms of generator requirements post-emergency.

Given the above, the Lifelines Advisory Group (LAG) and the wider CDEM Group identified a need to develop a Generator Plan to build on the knowledge and understanding gained from the Regional Fuel Plan. The LAG identified that improved knowledge about the overall state of lifelines generator use and post-event capacity was required to improve collective understanding and resilience. A resilience fund proposal to develop this plan was put forward and accepted for the 2019/20 financial year.

## 1.3 Context of this plan

This plan is a supporting operational document to the Manawatu-Whanganui CDEM Group Plan 2016 – 2021 (Version 1.3, 2018). This plan is 'operational response' oriented, and sits alongside a range of processes, procedures, policies and other documents that provide detail about how the CDEM Group operates.

This plan helps to give effect to the CDEM Group Plan by:

- *'Encouraging co-operative planning and action between the various emergency management agencies....'*, and
- Contributing to fulfilling Strategic Goal 3 of the CDEM Group Plan: to ensure *'agencies are aligned, prepared and able to provide an effective response to an emergency'*.

From a broader national perspective, and in the words of the mission of the New Zealand Lifelines Council, this plan contributes towards the over-arching purpose of the lifelines project, which is to:

- *'Enhance the connectivity of lifeline utility organisations in order to improve critical infrastructure resilience.'*

## 1.4 Scope

This plan builds upon the foundation documents for lifelines utilities in the region, in particular:

- The updated lifelines baseline report *'A Vulnerability Assessment of Lifelines Infrastructure in Manawatu Whanganui'* (Manawatu-Whanganui Lifelines Group, 2016)
- The *'Manawatu-Whanganui Regional Fuel Plan'* (Manawatu-Whanganui Lifelines Group, 2018)

- The ‘Manawatu-Whanganui Lifelines Initial Earthquake Response Plan’ (2019).

While this plan provides information on the current<sup>1</sup> level of lifelines generator use and anticipated post-event requirements, the information is based on a ‘stocktake’ approach rather than a detailed ‘audit-type’ approach. A stocktake approach means that information provided by lifelines utilities is accepted at whatever level of detail it is provided and ‘accepted at face value’ without the need for detailed verification. This approach supports the purpose of this plan for the M-W CDEM Group to gain a fundamental understanding about generator use and availability within the region.

This plan is pitched at the regional level, and is not intended to be a detailed statement of each lifelines utilities’ operational responses regarding generator usage, as these remain the responsibility of each utility and are outside the scope of this plan. Also outside the scope of this plan are the long-term planning, maintenance and replacement schedules for generators, as again these are the responsibility of individual lifelines utilities.

This plan does not include consideration of non-lifelines utilities generator usage within the M-W region, as this is a very broad scope project that is beyond the remit of the resilience fund.

## 1.5 How this plan was developed

The following steps were taken in development of this plan:

**Background work:** a review of existing projects within the CDEM sector was undertaken. The most recent National Lifelines Group projects and activities report was reviewed, and advice was sought from those CDEM Groups who had conducted similar projects. Previous information on generator usage in the region was reviewed (information developed during completion of the Regional Fuel Plan).

Little recent work specific to generator usage and commercially available supply has been completed, with the Waikato study in 2018 being the most recent. The following reports were drawn upon as examples, with the Waikato and Auckland reports being most directly relevant:

- Tairāwhiti CDEM Group fuel and generator contingency plan (2019): arrangements for continued fuel supply and available generator provision to CDEM-critical customers during emergencies
- Waikato CDEM Group (2018): review of generator needs versus regional availability
- Wellington Region CDEM Group Lifeline Response Priorities (2015): assessment of critical priorities, including some basic identification of generator use
- Auckland CDEM Group Auckland Region Generator Resources Review (2008): generator resource availability and lifelines/CDEM needs during emergencies.

**Stocktake of lifelines utilities generators:** all LAG members were asked to provide information on their generator usage, including information on their current stock of portable and fixed generators, post-event generator requirement function and facility requirements, whether the organisation has any existing agreements with suppliers, the level of criticality if power was unavailable, and if the organisation is aware of local generator suppliers.

All LAG members were asked to complete a generator stocktake form (see Appendix 1) covering the information above. Where information received was unclear, further information was requested. The information on usage was compiled by generator size and type, and by lifelines sectors – Telecommunications, Electricity/Gas, Water/Wastewater/CDEM, Transport and Health.

**Regional stocktake of commercially available generators:** the stocktake comprised both generators for sale and for hire within the region. A preliminary list of suppliers was developed via a web search, and information on generators compiled via a combination web, email and telephone enquiries.

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<sup>1</sup> Current to February 2020.

In addition, all suppliers were asked whether they were aware of other suppliers in the local areas. Information was collated on generators for sale and for hire by generator size and location within the region.

**Post-event generator requirements:** an estimate of anticipated post-event generator requirements was made by compiling all known LAG post-event requirements and comparing these requirements to the total number of equivalent sized generators for sale and for hire within the region.

**Generator availability outside the region:** a partial review of generator availability outside the region was completed, targeted at the anticipated size ranges where the greatest potential shortfall for the M-W region may occur. Some indicative guidance on supplies available in the upper North Island is provided.

**Operational response:** brief guidance on post-event use of this plan was developed to guide Lifelines Utility Coordinator (LUC) and/or operations/logistics functional use. The guidance is largely aimed at using the information available to tailor response towards quick and effective identification of probable issues and supply solutions. Some suggestions for potential improvements are also made.

**Development of draft plan:** information and advice from all sources above was compiled into a draft plan.

**Review and completion of final plan:** the draft plan was reviewed initially by Ian Lowe (CDEM Group Manager), then sent out for feedback from LAG members. The plan was revised and completed based on feedback.

## 1.6 Assumptions and limitations

### 1.6.1 Assumptions

This plan is based on the following assumptions:

- Post-event generator requirements are based on the maximum credible earthquake event as defined within the Manawatu-Whanganui Lifelines Initial Earthquake Response Plan (2019). This means that significant impacts to all lifelines utilities is assumed, including widespread loss of electricity
- The focus is to establish a *regional level* understanding of generator use and post-event availability, which is akin to a regional 'stocktake'. This plan *is not* an audit or in-depth assessment of individual or collective lifeline utility preparedness
- Information provided by LAG members is taken at face value, and accepted as true and correct at the time it was provided. Additional information has been requested where omissions have occurred or are suspected, but information gathering has only occurred to the level required to establish a regional picture (e.g. detailed specifications of individual generators or facilities has not been requested, and is not required)
- The maximum credible event scenario also affects the Wellington region, effectively cutting off access from the M-W region to Wellington City. Therefore, accessing additional generator supplies from Wellington City is not considered feasible as these resources will likely be needed locally and will not be able to be transported to the M-W region.

### 1.6.2 Limitations

The following limitations are noted:

- **LAG member generator stocktake:** while reasonable efforts were made to ensure accurate information was provided, there are some gaps in knowledge of generator numbers and sizes. Not all LAG members provided a completed copy of the stocktake form, but almost all provided detailed information on usage
- **Stocktake of commercial generators available in the M-W region:** while all reasonable efforts were made to identify all suppliers, it is likely that some suppliers have not been identified. This means that the supply within the region may be slightly higher than anticipated. The supply of generators for sale and hire is also highly dependent upon the stocks present on any given day, including stock moved out of the region for hire, which is highly variable
- **Post-event generator requirements:** there is a level of uncertainty around post-event requirements where LAG members have not identified these one way or another. In addition the numbers on post-event

oversupply or shortfall are theoretical only, in that they are entirely dependent upon assumptions of post-event stocks at any given time and availability of supply to lifelines utilities in preference to other customers

- Due to a combination of the above points, the information provided in this plan should be viewed as indicative only. This outcome is similar to the outcome of the Waikato region stocktake, which concluded that the information on post-use requirements and availability was inaccurate due to the inability to predict generator stocks in any place at any specific time.

## 1.7 Audience

This plan is intended primarily for:

- The LUC or persons performing the lifelines utility coordination role during a response in an ECC or EOC
- Lifelines utilities within the Manawatu-Whanganui CDEM Group.

This plan may also be of interest to the following audience:

- CDEM Group Controllers
- The Group EMO Manager and staff
- ECC/EOC staff from across the CIMS functions, particularly Intelligence, Communications and Welfare
- The CDEM Group Joint Committee and Coordinating Executive Group
- National Emergency Management Agency (NEMA) staff
- National Crisis Management Centre staff, in particular the National Lifeline Utility Coordinator and other Lifelines desk staff
- Lifelines Sector Coordinating Entities (SCEs)
- Other central government agencies and government officials involved in the response.

While the information contained in this plan may be useful to other audiences (such as other CDEM Groups), it is set at a Manawatu-Whanganui CDEM Group level, and therefore does not directly address the response actions to be followed by those other audiences.

## 1.8 Activation

This plan will be activated as and when required by decision of the CDEM Group Controller.

## 2 REGIONAL LIFELINES GENERATOR STOCKTAKE

This section provides a stocktake of lifelines generator use and commercial availability with the M-W region as at February 2020.

Usage information is provided by generator size and type in total, and broken down by lifelines sector.

Information on commercially available generators for sale and hire is also provided in total, and by size and location.

Note that the detail underpinning this section is contained within two companion documents:

1. M-W LAG Generators 2020: Excel spread sheet containing a full breakdown of all information received
2. Compiled stocktake sheets: all sheets and other information received, broken down by sector.

### 2.1 Regional lifelines generator use

**Note:** refer to the 'M-W LAG Generators 2020' Excel spread sheet (LAG Generator Stocktake tab) and 'Compiled stocktake sheets' Word document for a full list of generators.

#### 2.1.1 Total LAG generators by size/type

Generator Size (kVA)	Fixed	Mobile
Up to 10	8	77
11 to 69	41	17
70 to 299	47	8
300 to 750	14	1
750+	2	1
Unconfirmed	15	4
<b>Total</b>	<b>127</b>	<b>108</b>

#### 2.1.2 Total LAG generators by sector

Lifelines Sector	Fixed	Mobile
Telecommunications/Broadcasting	40	36
Electricity/Gas	19	19
Water, Wastewater, CDEM	51	43
Transport	5	7
Health	12	3
<b>Total</b>	<b>127</b>	<b>108</b>

### 2.1.3 LAG sector generators by size/type

#### Telecommunications/Broadcasting

Generator Size (kVA)	Fixed	Mobile
Up to 10	4	33
11 to 69	23	3
70 to 299	6	0
300 to 750	3	0
750+	0	0
Unconfirmed	4	0
<b>Total</b>	<b>40</b>	<b>36</b>

The following points are noted:

- 19 of the fixed generators in the 11-69 kVA range are owned by Chorus
- Most of the smaller mobile units provide battery charging capability for cell towers
- Two of the fixed generators in the 300-750 kVA range are owned by Kordia at Wharite Peak, a site of national significance
- Both Chorus and Vodafone have flagged that they would draw upon national generator resources as required:
  - Chorus has access to 80 6.5 kVA portable generators<sup>2</sup>, a national resource of trailer mounted units, and works with Downers who own numerous 3.5-6.5 kVA units in the lower North Island
  - Vodafone has access to around 30 portable units from 3.5 – 7 kVA stored around the North Island, and an additional 14 11 kVA trailer units around the North Island.

#### Electricity/Gas

Generator Size (kVA)	Fixed	Mobile
Up to 10	3	11
11 to 69	3	2
70 to 299	4	4
300 to 750	1	1
750+	0	1
Unconfirmed	8	0
<b>Total</b>	<b>19</b>	<b>19</b>

The following points are noted:

- There is not a large reliance on generator backup due to the existence of battery backup and little need for generators to run gas networks
- 11 of the 19 fixed generators are owned by Genesis as backup for their major assets on the Tongariro power scheme. Genesis will also draw from other generation sites outside the region post-emergency
- While Powerco have flagged that generators of various sizes may be required for substations, it is unlikely that all substations in the region would be affected.

<sup>2</sup> Access to 20 is assumed as part of this stocktake.

**Water/Wastewater/CDEM**

Generator Size (kVA)	Fixed	Mobile
Up to 10	0	23
11 to 69	13	12
70 to 299	31	4
300 to 750	5	0
750+	0	0
Unconfirmed	2	4
<b>Total</b>	<b>51</b>	<b>43</b>

The following points are noted:

- The majority of fixed generators are in the 70 – 299 kVA range and are installed at water and wastewater treatments plants
- Several Councils are in the process of generator renewal/upgrade, and are planning to improve current shortfalls in the near future
- 18 of the mobile generators are owned by Palmerston North City Council.

**Transport**

Generator Size (kVA)	Fixed	Mobile
Up to 10	0	7
11 to 69	1	0
70 to 299	2	0
300 to 750	1	0
750+	0	0
Unconfirmed	1	0
<b>Total</b>	<b>5</b>	<b>7</b>

The following points are noted:

- Most of the generators are owned by Kiwirail. While there are numerous generators at crossing loops, no information is provided on sizes or numbers
- There is limited need or use overall outside Kiwirail and airports.

**Health**

Generator Size (kVA)	Fixed	Mobile
Up to 10	1	3
11 to 69	1	0
70 to 299	4	
300 to 750	4	0
750+	2	0
Unconfirmed	0	0
<b>Total</b>	<b>12</b>	<b>3</b>

The following points are noted:

- While the total numbers are low, the average size and criticality of generators is high
- Both DHBs operate have built in additional backup capacity and are unlikely to require additional capacity.

## 2.2 Commercial generators available within the M-W region

**Note:** refer to the 'M-W LAG Generators 2020' Excel spread sheet (MW Region Commercial Generators tab) for a full list of all suppliers and details.

### 2.2.1 Total generators available for sale and hire

Generator Size (kVA)	For Sale	For Hire
Up to 10	146	62
11 to 69	7	18
70 to 299	4	5
300 to 750	2	1
750+	0	0
<b>Total</b>	<b>159</b>	<b>86</b>

The following points are noted:

- The vast majority of generators for sale (92%) and for hire (72%) are in the up to 10 kVA range
- Above 10 kVA, the majority of availability within the region is in hiring (65%) rather than purchasing
- There is very limited supply above 300 kVA.

### 2.2.2 Generators for sale by location

Generator Size (kVA)	Up to 10	11 to 69	70 to 299	300 to 750	750+	Totals
<b>Whanganui</b>	16	-	-	-	-	<b>16</b>
<b>Marton</b>	1	-	-	-	-	<b>1</b>
<b>Feilding</b>	10	-	-	-	-	<b>10</b>
<b>Waiouru</b>	-	-	-	-	-	-
<b>Ohakune</b>	-	-	-	-	-	-
<b>Levin</b>	3	-	-	-	-	<b>3</b>
<b>Palmerston North</b>	66	5	4	2	-	<b>77</b>
<b>Sanson</b>	30	1	-	-	-	<b>31</b>
<b>Foxton</b>	-	-	-	-	-	-
<b>Pahiatua</b>	4	1	-	-	-	<b>5</b>
<b>Dannevirke</b>	5	-	-	-	-	<b>5</b>
<b>Taihape</b>	-	-	-	-	-	-
<b>Taumarunui</b>	11	-	-	-	-	<b>11</b>
<b>Totals</b>	<b>146</b>	<b>7</b>	<b>4</b>	<b>2</b>	-	<b>159</b>

The following points are noted:

- Unsurprisingly, a large majority of the generators for sale are in Palmerston North
- There is almost no stock available for sale above 10 kVA outside of Palmerston North.

### 2.2.3 Generators for hire by location

Generator Size (kVA)	Up to 10	11 to 69	70 to 299	300 to 750	750+	Totals
<b>Whanganui</b>	16	4	-	-	-	<b>20</b>
<b>Marton</b>	2	2	3	-	-	<b>7</b>
<b>Feilding</b>	12	-	-	-	-	<b>12</b>
<b>Waiouru</b>	2	1	-	-	-	<b>3</b>
<b>Ohakune</b>	3	-	-	-	-	<b>3</b>
<b>Levin</b>	4	-	-	-	-	<b>4</b>
<b>Palmerston North</b>	19	10	2	1	-	<b>32</b>
<b>Sanson</b>	-	-	-	-	-	-
<b>Foxton</b>	-	-	-	-	-	-
<b>Pahiatua</b>	-	1	-	-	-	<b>1</b>
<b>Dannevirke</b>	4	-	-	-	-	<b>4</b>
<b>Taihape</b>	-	-	-	-	-	-
<b>Taumarunui</b>	-	-	-	-	-	-
<b>Totals</b>	<b>62</b>	<b>18</b>	<b>5</b>	<b>1</b>	-	<b>86</b>

The following points are noted:

- The pattern of generator hire availability roughly follows that of those for sale, being predominantly based in Palmerston North and Whanganui
- Some smaller towns such as Marton are over-represented in availability, while others such as Taumarunui are under-represented.

### 3 ANTICIPATED POST-EVENT GENERATOR REQUIREMENTS

The following table has been compiled to match stated post-event generator requirements with availability of similar sized generators within the M-W region. The table assumes that there will be equal willingness to fulfil post-event requirements by purchasing or hiring generators.

This table should be read with the limitations outlined in section 1.6.2 in mind.

Size (kVA)	Number required	Number available for sale in M-W	Number available for hire in M-W	Oversupply or shortfall (theoretical)
5.5-7.5	10	45	23	58
20	4	1	3	-
30	2	0	3	1
44-50	14	5	3	6
51-150	11	1	10	-
200	1	1	1	1
210	1	1	0	-
500	1	1	1	1
	<b>44</b>	<b>55</b>	<b>44</b>	

The following points are noted:

- There is likely to be theoretical oversupply of small generators, assuming that suppliers give first preference to essential services, including lifelines utilities
- Mid-range generator sizes (44 – 50 kVA and 51 – 150 kVA) are most likely to be needed post event. Almost all this demand comes from the need to provide alternate power to water and wastewater plants, and there is a theoretical shortfall of 6 units within the 44 – 50 kVA size range

The LAG members who have flagged possible post-event requirements are as follows:

- **5.5 – 7.5 kVA:** 2 Degrees (10 units)
- **20 kVA:** Horowhenua District Council (4 units)
- **30 kVA:** Rangitikei District Council (2 units)
- **44-50 kVA:** Tararua District Council (7 44 kVA units); Manawatu District Council (5 50 kVA units); Horowhenua District Council (2 50 kVA units)
- **51 – 150 kVA:** Ruapehu District Council (10 units between ~50 – 100 kVA); Powerco (1 150 kVA unit)
- **200 kVA:** Palmerston North City Council<sup>3</sup> (1 unit)
- **210 kVA:** Palmerston North Airport (1 unit)
- **500 kVA:** Palmerston North City<sup>4</sup> (1 unit).

<sup>3</sup> Inferred, based on similar sized plant requirements (refer to spread sheet comments)

<sup>4</sup> Comment as above.

## 4 GENERATOR AVAILABILITY OUTSIDE THE REGION

A limited assessment of generator availability outside the region was completed to assess the ease with which a shortfall in post-event generator capacity could be addressed. The focus was on obtaining generators 20 kVA and above, since this is where the M-W shortfall is most likely to be. The focus was also on larger companies who have a presence in the upper North Island, as it is assumed that access to Wellington City supplies in a maximum credible event would not be possible.

### 4.1 Indicative generator hire outside the M-W region

In February 2020, NEMA were holding discussions with some of the large generator hire companies on a Memorandum of Understanding to prioritise generator provision for the CDEM sector during emergencies. NEMA has engaged with the following companies that provide generators over 100 kVA:

- Kennards Hire ([www.kennardshire.co.nz](http://www.kennardshire.co.nz))
- Aggreko ([www.aggreko.com/en-nz](http://www.aggreko.com/en-nz))
- Hirepool ([www.hirepool.co.nz](http://www.hirepool.co.nz))
- Q Power ([www.qpower.co.nz](http://www.qpower.co.nz))
- Generator Rental Services ([www.generatorrentals.co.nz](http://www.generatorrentals.co.nz))
- NZPGS ([www.nzpgs.co.nz](http://www.nzpgs.co.nz)).

It is noted that most of the above companies have a strong presence in the upper North Island – the area of particular importance to the M-W region in terms of post-event supply.

An assessment of the indicative supply ability of two of the above companies is provided below.

#### Kennards Hire

At 15 June 2020, the number of generators in stock and available for hire in the North Island branches (Auckland, Tauranga and Hamilton) excluding Wellington was:

- **20 kVA:** 28
- **45 KVA:** 11
- **60 KVA:** 7
- **100 KVA:** 8
- **250 KVA:** 5.

#### Aggreko

At 15 June 2020, the following generators stock was available for hire in North Island branches (Auckland, Tauranga, New Plymouth) excluding Wellington:

- **20, 60, 125, 200, 350 and 500 kVA:** exact numbers not available, but the company carries *between 10 and 30 units of each size* (at least 60 units of 20 kVA or above)
- **800, 1000, 1250, and 1375 kVA:** a smaller number of each of these larger sizes are available (but cannot confirm exact numbers).

#### Waikato Lifelines Utilities findings

A survey of four large generator hire companies (Porter Hire, NES Hire, Hirepool and Kennards Hire) within the Waikato region was completed in 2018.

The survey found the following generator hire availability in the above 10 kVA range:

- **11–69 kVA:** 20
- **70–299 kVA:** 11
- **300–750 kVA:** 10
- **750+ kVA:** 2

It was noted that at the time of the survey that Porter Hire had no stock for hire owing to large out-of-region projects, which may make the above numbers an underestimate on average.

## 4.2 Conclusions on post-event generator supply

It is concluded that based on the post-event generator requirements provided, the number of generators for hire in the upper North Island would more than cover M-W lifelines requirements in the 20 kVA and above range. While the exact numbers of generators for hire in the upper North Island is unknown<sup>5</sup>, the numbers provided by Kennards Hire and Aggreko alone provide some reassurance of supply, and represent only a portion of actual availability.

The limitations of this information are recognised, including a lack of certainty of supply from any provider at any given time, and the assumption that at least one land transport access route will be available into the M-W region from the upper North Island.

# 5 OPERATIONAL RESPONSE

## 5.1 Post-event Lifeline Utilities Coordinator actions

The following Lifelines Utility Coordinator actions are recommended following major events that result in widespread loss of electricity:

1. Initiate 'Quick Start Guide' actions from the Lifelines Initial Earthquake Response Plan (summarised on p. 3 and Appendix 2 of this plan)
2. As a priority, seek to make contact with lifeline utilities to assess their status and need for generation capacity
3. Look for potential generation shortfalls using all available impact assessment information, combined with section 3 of this report
4. Gain as much information on road status as possible, as this is a key determinant of ability to provision alternate generation capacity
5. Review status and stock availability of local generator suppliers using the '**MW LAG Generators 2020**' spread sheet (MW Region Commercial Generators tab) – if possible
6. Contact national LUC networks (regional and National LUC, if appointed) and sector coordinating entities to engage their assistance e.g. Telecommunications Emergency Forum, local Government etc.
7. Fulfil Controller's response expectations relating to identifying and facilitating alternate power supplies.

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<sup>5</sup> Provision of these numbers is beyond the scope of this plan.

## 5.2 Improving post-event outcomes

While the nature of this plan is response, the following considerations may help to improve post-event outcomes:

- Each LAG member should be encouraged to regularly review their preparedness for widespread electricity outages taking into account the information contained in this plan, including generator ownership and commercially available generator supplies. LAG members should also review their ability to connect generators on site, and take steps to ensure transport and re-fuelling arrangements are in place
- Where LAG members rely on other agencies for post-event supply, they should develop arrangements pre-event to ensure post-event supply e.g. hire companies, partner agencies with national stocks, etc.
- The LAG should reinforce encouragement of local hire companies to prioritise supply for lifelines utilities post-event. Anecdotally, some suppliers are aware of this while others are not
- LAG, via the M-W CDEM Group should encourage the National Emergency Management Agency to complete a Memorandum of Understanding for national post-event supply with the six large generator hire companies listed in Section 4.1 of this plan
- Further work to review and improve the lack of post-event preparation of fuel stations within the region should be completed to help improve alternate power supply resilience.

## 6 REFERENCES

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Auckland Engineering Lifelines Group (2008). Auckland Region Generator Resources Review. Auckland Civil Defence Emergency Management Group.

Manawatu-Wanganui Emergency Management Group (2018). Civil Defence Emergency Management Group Plan 2016 – 2021, Version 1.3. Palmerston North.

Manawatu-Wanganui Region Lifelines Project (2018). Regional Fuel Plan Manawatu-Wanganui Regional Lifelines Project Report. Palmerston North.

Manawatu-Wanganui Region Lifelines Project (2019). Lifelines Initial Earthquake Response Plan Manawatu-Wanganui Regional Lifelines Project Report. Palmerston North.

Manawatu-Whanganui Lifelines Group (2016). Manawatu-Whanganui Lifelines Project - A Vulnerability Assessment of Lifelines Infrastructure in Manawatu Whanganui. Palmerston North.

Ministry of Civil Defence & Emergency Management (2018). Wellington Earthquake National Initial Response Plan Supporting Plan [SP 02/18]. Wellington.

Tairāwhiti Civil Defence Emergency Management Group (2019): Fuel and generator contingency plan. Gisborne.

Waikato Lifelines Utilities Group (2018). Generator Plan Findings v3 (spread sheet). Waikato CDEM Group, Hamilton.

Waikato Lifelines Utilities Group (2019). Generator assessment and findings summary (PowerPoint presentation). Waikato CDEM Group, Hamilton.

Wellington Lifelines Group / Wellington Region Emergency Management Office / Wairarapa Engineering Lifelines Association (2015). Lifeline Response Priorities: 7 April 2015. Wellington Civil Defence Emergency Management Group.

## APPENDIX 1: REGIONAL GENERATOR STOCKTAKE FORM

### General

<b>Organisation</b>		<b>Point of contact</b>	
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### Current Generator Stock

#### Number of generators in stock

Portable		Size/s (kVA)	
Installed		Size/s (kVA)	
<b>Total number available</b>			
<b>Other relevant information</b>			

### Post-emergency power/generator requirements

<b>Generator load (kW/hr) and timeframe required</b>	
<b>Phase requirements (single or three-phase?)</b>	
<b>Total number of generators required to run essential functions</b>	

### Other information (if relevant)

#### Functions/facilities requiring post-emergency power via generators:

Installed locations	
Are your facilities pre-wired to the correct specifications?	
Are there any site-specific issues that may prevent delivery of and/or connection to a generator?	
What is the intended refuelling method?	
<b>Do you have existing agreements with a generator-hire company (or companies) for the supply of generators post-emergency?</b>	
<b>Level of criticality (impacts to response if emergency power unavailable)</b>	

### Other organisations

<b>Are you aware of any other generator stocks outside of the LAG members and hire companies?</b>	
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## APPENDIX 2: LIFELINES UTILITIES RESPONSE COORDINATION

**Note: the following sections are reproduced from the *Lifelines Initial Earthquake Response Plan***

### 3.2 Lifelines utilities coordination and response actions (pp. 12-14)

#### 3.2.1 Overview of Lifelines Utilities Coordination

The Manawatu-Wanganui CDEM Group Plan (p. 60) states that lifeline coordination in the Group ECC is provided by the Lifeline Utility Coordinator (LUC) appointed by the Group. The LUC role includes:

- The coordination of the flow of information between lifeline utilities and the Group ECC
- Providing the Group Controller with information and advice about lifeline utilities
- Ensuring the lifeline utilities are aware of, and acting on the Group Controllers priorities regarding lifelines.

In summary, the objectives of LUCs are to coordinate the actions of lifeline utilities and CDEM organisations to provide a safe and effective response, and support the restoration of lifeline services as soon as possible.

Further information about the lifelines coordination role in the GECC is provided in Appendix 4.

#### 3.2.2 Lifeline Utility Coordinator initial response actions

Following notification of the event and activation of the GECC, the LUC or person/team assigned LUC responsibilities should undertake the following actions:

1. Establish and maintain contact with regional lifeline utilities (those that communicate directly with the GECC, per Figure 2 of the Lifelines Initial Earthquake Response Plan), and advise that the GECC is operational. Ask for contact details of the utility person/s that will provide the communication point with CDEM during the emergency. Ask for a quick comment on how extensively the utility's services are affected (and/or request a formal status report as per Appendix 5 Lifelines Initial Earthquake Response Plan, if required). **Note:** refer to section 3.2.3 of the Lifelines Initial Earthquake Response Plan for detailed information on sector initial actions, priorities and needs.
2. Once received, provide a list of contact details to the Operations Manager, so that GECC messages (media releases, declarations, situation reports etc.) can be sent directly to utilities by the relevant GECC team.
3. Let other GECC managers know that you have established contact with the lifeline utilities and can access information from them, or pass on requests to them.
4. Confirm with operational Local EOCs that significant local water/waste and roading information should be reported via them to the GECC.
5. Maintain a log of all communications received. For important messages sent (e.g. initial notification of activation, messages requiring utility action, declarations etc.) set up automatic receipt notification and record times at which each utility receives the email. Follow up non-receipts with phone calls.
6. Request, receive and assess lifeline utility status reports. Facilitate impact assessments and information collection if required, and set agreed expectations on the frequency of reporting. Immediately advise the Operations Manager of requests for support or significant information received that other GECC staff may need to be aware of. Assess whether any 'inter-dependency' issues need to be addressed by utilities re-prioritising their restoration efforts. **Note:** refer to sections 3.3 and 3.4 of the Lifelines Initial Earthquake Response Plan for information on sector initial actions, priorities and needs.

7. Pass on requests from the Controller, such as in relation to service restoration priorities. Note that utilities should be asked to take into account these response service restoration priorities in the absence of any CDEM instruction to the contrary:
  - Critical health and disability services (e.g. District Health Boards, Public Health Units and land and air ambulance services)
  - Emergency services and management (e.g. New Zealand Police, Fire & Emergency New Zealand, Emergency Coordination or Operations Centres)
  - Lifelines infrastructure (e.g. energy, communications, water and transport)
  - Vulnerable sectors (e.g. immobile or vulnerable groups of people such as in rest homes or prisons)
  - Isolated communities
  - Key areas (e.g. central business districts)
  - Commercial producers (e.g. manufacturing facilities and dairy factories)
  - Residential zones.<sup>6</sup>
8. Maintain a list of actions required from GECC and by utilities, status of action and response made to utility.
9. Display key utility information on a whiteboard or screen if accessible.
10. Develop lifeline utility status summary report per Appendix 6 of the Lifelines Initial Earthquake Response Plan, and assist the intelligence team by providing utility information for GECC Situation Reports.
11. Coordinate/facilitate sector coordination conference calls as required.
12. Provide advice to the Controller, particularly with regard to regional impacts, response priorities, available resources, strategic goals, tactical objectives and action plans.
13. Attend Controllers briefings as requested, report utility status, key actions required and respond to questions.
14. Provide information for media releases, situation reports and central government reports about the status of lifeline utilities.
15. Liaise with the NCMC, National LUC (if appointed), other CDEM Groups and the national Sector Coordinating Entities as required.

### 3.2.3 Lifeline utilities initial response actions

Following the event, lifeline utilities will immediately activate business continuity and response plans.

Following notification and activation of the GECC, lifeline utilities should undertake the following actions:

1. Establish contact with the LUC or GECC as illustrated in Figure 1 by whatever means available, and agree frequency of two-way reporting.
2. Provide status reports to the Local EOC and/or GECC as per the Status Report Template in Appendix 5, which covers:
  - Scale of event impact on network
  - Major disruptions experienced, including location and number of users affected

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<sup>6</sup> Refer to Guide to the National CDEM Plan 2015, Version 2.0, Section 13 Lifeline utilities, p. 3.

- Estimated restoration times for known disruptions
  - Priority areas of response actions being undertaken
  - Alternative solutions available to users
  - Precautions, public information to be promulgated
  - Requests for support or specific information.
3. For regular reporting using the status report template, email is the preferred communication method. In the instance of failure of the preferred communication methods the following may be used, in order of preference:  
1. Telephone; 2. Radio; 3. Physical attendance at the GECC (if possible).
  4. When the GECC is operational, lifeline utilities should discuss draft media releases with the Group Public Information Manager prior to release, and copy media statements to the GECC when they are released.
  5. Work within established CDEM Group structures, receive CDEM Group reports, and take CDEM actions as appropriate – including requests for prioritisation of services to support the response effort.<sup>7</sup>
  6. National lifeline utilities liaise with the NCMC, National LUC and/or agreed National Sector Coordinating Entity as required, in addition to continuing liaison with the CDEM Group.

### 3.4 Primary response coordination considerations (pp. 20-21)

#### 3.4.1 Summary of initial actions, priorities, interdependencies and needs

The following observations are made based on the collective information provided in Tables 1-5 of the Lifelines Initial Earthquake Response Plan, and are designed to inform initial LUC response actions:

1. During the first 24-48 hours, lifeline utilities will be at or near their response capacity, and concentrating on staff safety and wellbeing, activation of arrangements, and if possible initial impact assessments. There may be little room for any other actions within this timeframe.
2. Following the above, the next priorities will be on managing public health and safety risks such as damaged live electricity lines, gas pipeline leaks and water contamination issues.
3. Many lifeline utilities may not have the ability to contact CDEM within the first 24-48 hours, but all will attempt to do so as soon as possible by whatever means are available.
4. The main interdependency is road access (upon which impact assessments are highly dependent), followed closely by priority access to fuel, access to telecommunications and mains electricity supply.
5. Many lifeline utilities will request priority access to helicopters following the event, as they will depend upon access for assessment and immediate repair work.
6. There is a need for immediate, coordinated lifeline utilities reconnaissance and initial impact assessment (refer to the following section 3.4.2).

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<sup>7</sup> Refer to section 3.2.2, bullet point '7' for service restoration priorities to take into account.

### 3.4.2 Reconnaissance and initial lifelines impact assessment

A lack of situational awareness will be of critical concern in the days following the earthquake, and developing an understanding of the scope and scale of impacts will be critical for enabling an effective response.

The following information requirements have been identified by the Manawatu-Whanganui Lifelines Advisory Group members (per Tables 1-5 of the Lifelines Initial Earthquake Response Plan) as being response-critical immediately following the event:

#### Critical transport links and assets (land, air and sea)

- High-level aerial sweep of impacted areas to establish geographic scale of impacts
- Detailed assessment of the state highway and rail networks, including level of service available
- Status of Base Ohakea, Palmerston North and Whanganui airports, with particular focus on their ability to receive fixed and rotary wing aircraft, and any operational constraints or restrictions imposed
- Status of Whanganui Port, with particular focus on its ability to receive smaller coastal freight vessels and commercial boats, and any operational constraints or restrictions imposed
- Status of local roads, and alternative non-road routes into/out of the region (such as tracks and other minor routes).

#### Electricity and gas, telecommunications, fuel supply and three-waters and infrastructure

- Status of water storage facilities, water and wastewater services infrastructure, and areas affected by water outages and/or contamination
- Status of electricity and gas networks and infrastructure, areas affected by power and gas outages and any immediate public health risks
- Status of telecommunications networks and infrastructure (internet, mobile networks, landline, radio, television), including areas affected by communications blackouts
- Status of fuel distribution and storage infrastructure.

#### Hospitals

- Scale and scope of damage to Palmerston North and Whanganui hospitals, and support required.