



AUCKLAND CDEM FUEL CONTINGENCY PLAN

VERSION 3.1: OCTOBER 2013

Version Number	Amendments	Issued
3.0	Full update of plan, review of priority fuel stations and CDEM-Critical customers	May 2013
3.1	Priority fuel stations list updated to show Gull site generator capable.	October 2013

PREFACE

This plan was initially developed in 2007 and issued in February 2008 by a working group of Auckland Civil Defence Emergency Management Group (ACDEMG) and the Auckland Engineering Lifelines Group (AELG) with input from other agencies acknowledged below.

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ACRONYMS USED IN THIS DOCUMENT

BAU	Business As Usual
CDEM	Civil Defence Emergency Management
COLL	Coastal Oil Logistics Limited
IEA	International Energy Agency
IEAA	International Energy Agreement Act
JUHI	Joint User Hydrant Interplane
LUC	Lifeline Utility Coordinator
MED	Ministry of Economic Development
NESO	National Emergency Sharing organisation
OERS	Oil Emergency Response Strategy
RAP	Refinery to Auckland Pipeline
TLF	Truck Loading Facility
WOSL	Wiri Oil Services Limited

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1. INTRODUCTION

1.1 Scope

This plan gives effect to the *National CDEM Fuel Plan* at an Auckland region level. It provides:

1. An overview of the potential fuel supply disruption scenarios in Auckland.
2. Roles and responsibilities during fuel shortages in Auckland.
3. Processes for prioritising allocation of fuel to CDEM-Critical Customers in Auckland.
4. How critical resources will be managed.
5. Further action that can be taken to improve the regional resilience.

1.2 Roles and Responsibilities

All agencies are required to:

- have plans and procedures to enable them to perform their functions outlined in this Fuel Plan; and
- ensure relevant staff and contractors are aware of, and are adequately trained to implement, these plans and procedures.

The specific roles and responsibilities of key sectors managing major fuel disruptions are summarised in Table 1 (further detailed in the *National CDEM Fuel Plan*).

Sector/Agency	Planning Roles and Responsibilities
Lifeline Utilities (includes fuel sector)	■ Be able to function to fullest possible extent in an emergency, albeit at a reduced level.
	■ Have arrangements with fuel suppliers to get priority in an emergency.
	■ Participate in CDEM planning and exercises on an ongoing basis.
	■ Have continuity plans in place for organisation and sector.
	■ Provide technical advice to CDEM.
Service Stations	■ Maintain Business Continuity Plans to ensure continued operation.
	■ Maintain plans to access power backup in an emergency.
	■ Test arrangements as part of CDEM exercises.
CDEM agencies	■ Maintain national/regional CDEM fuel contingency plans.
	■ Identify national/regional CDEM Critical Customers and priorities.
	■ Support fuel sector and Local Authorities, as required for regional fuel distribution disruptions.
MED	■ Maintain the Oil Emergency Response Strategy.
	■ Manage and coordinate govt response to national fuel supply disruption.
	■ Convene and chair NESO.

Table 1: Sector Responsibilities

It is noted that the following agencies have statutory powers in certain fuel shortage circumstances:

- The **National Emergency Sharing Organisation (NESO)** is an industry/government group that can be activated by MED. The International Energy Agreement Act (IEAA) 1976 requires that a NESO group exist in order to deal with an international disruption to fuel supplies. The IEAA is one of several Acts that provides powers to the Minister of Energy and Resources under which regulations may be introduced controlling the production, acquisition, distribution, supply or use of fuel in New Zealand.
- The **Ministry of Economic Development (MED)** administers the *Oil Emergency Response Strategy (OERS)*, which includes five mechanisms to either reduce demand or increase the supply of fuel. MED would only

consider implementing mechanisms after consulting NESO. The OERS mechanisms are listed below, along with the relevant pieces of legislation under which the Minister of Energy and Resources has the power to introduce them:

- Ticket release
 - Specification relaxation - (Energy (Fuels, Levies, and References) Act 1989)
 - Surge production – (International Energy Agreement Act 1976)
 - Restricted Purchasing Scheme (rationing) - (Petroleum Demand Restrain Act 1981)
 - Voluntary fuel savings campaign.
- **Under the CDEM Act 2002, National and Group Controllers** have access to emergency powers once a declaration has been made (s. 85) in order to “provide for the conservation and supply of fuel”, coupled with ability to requisition supplies (s. 90) under certain circumstances.

1.3 An Overview of Fuel Supply to Auckland

Crude oil imported by the ‘Big 4’¹ is refined by Refining NZ at Marsden Point, which supplies 70% of the finished oil products consumed in NZ with the remaining volume being directly imported. Stocks at Marsden Point hold around 5 days normal national demand.

From Marsden Point, fuel is shipped to ports around New Zealand and piped to Wiri Oil Services Ltd (WOSL) from where 95% of Auckland’s fuel is distributed. WOSL typically stores around 6 days normal Auckland demand, though this varies depending on pumping cycles for various product. From WOSL, jet fuel is piped to the airport and other oil products are trucked to fuel stations and end users.

NZ has a highly integrated and coordinated supply chain. The 4 major oil companies share use of a number of key facilities, including Marsden Point, WOSL and the connecting pipeline. When there is a stock shortage, stocks are allocated between companies based on their current stock ownership and normal demand requirements at each storage location.

Gull imports refined fuel directly into its terminal in Mount Maunganui and trucks all of its petrol and diesel supply to Auckland.

Any significant fuel supply disruption anywhere in NZ can potentially have impacts across the national supply chain.

1.4 Fuel Disruption Scenarios

Most fuel supply disruptions can and will be managed within the oil industry. However, Attachment 4 details a number of scenarios which could potentially require government assistance to ration and manage fuel supplies in Auckland (and in many cases nationally). For example:

- A major unplanned refinery outage longer than 1-2 weeks. The oil industry could secure additional refined fuel supplies from offshore but this is likely to take at least 6 weeks. If the outage is caused by a tsunami (the Refinery is within modelled inundation zones) the impacts on the fuel sector are likely to be much wider than Northland and Auckland as most ports where fuel is shipped in are on the east coast.
- Disruption to the Refinery to Auckland pipeline (RAP) or WOSL depot of longer than a week. If the refinery is still operating, some stock could be supplied by trucking from outside the region, but only an estimated one third of normal demand can be met in this way.
- Widespread power outages across the region (few service stations in Auckland have back-up generation).

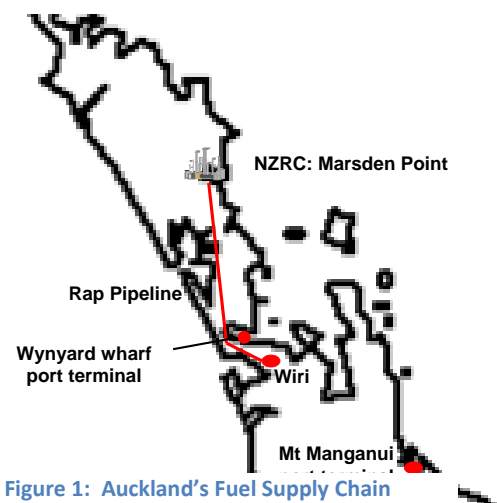


Figure 1: Auckland’s Fuel Supply Chain

¹ Z, Chevron, BP, ExxonMobil

1.5 Assumptions and Expectations

In the event of a disaster, and/or public knowledge of an impending fuel shortage, it can be expected that:

- Panic buying will occur, peaking in the first 1-3 days (until most vehicle ‘tanks are full’); and
- Fuel stocks at stations along evacuation routes will experience particularly high demand.

During fuel shortages, it can be expected that:

- It will take around 2-3 days for fuel rationing via OERS mechanisms to be in place;
- Fuel station managers are likely to voluntarily implement measures (with or without request);
- Most customers will be patient and respectful, but behavior and law and order could deteriorate; and
- Fuel companies will have plans for how they will manage security at stations.

Many fuel supply disruptions impacting Auckland will have national impacts and are likely to be coordinated by the National Crisis Management Centre (if part of a CDEM response) or MED (via NESO).

2. PRIORITISING FUEL ALLOCATION

2.1 Responsibilities

Table 2 illustrates each sector’s responsibilities and key actions as a fuel supply disruption increases (reference, National CDEM Fuel Plan). The overall philosophy is that business-as-usual commercial arrangements will remain in place as long as possible, or until such time as there is a possible threat to continued supply of fuel to CDEM-Critical Customers.

2.2 Activation of Arrangements

In the event of a potential Level 2b situation, fuel companies should advise:

- The Auckland CDEM Group Duty Officer (ph 027 473 8357) if the impact is largely confined to that region;
- The National CDEM duty officer (ph 04-473 0021) if potential to impact on several regions, and
- MED: Manager Electricity Markets (ph 04 460 1375) or Senior Analyst Energy Markets (04-474 2628).

The Auckland Lifeline Utility Coordinator with liaise with the Group Controller, National Controller and MED to determine the appropriate mechanism for fuel sector coordination. If an Auckland CDEM-led response may be required in an event with fuel sector impacts, the Group will convene a conference call with major fuel station owners and MED to discuss:

- likely range of impacts of the event to the fuel consumers;
- whether rationing measures need to be considered;
- whether support is required for fuel tanker access (eg: dedicated priority routes or lanes along roads);
- whether CDEM-Critical Customer priority allocation should be commenced, and if so, designated service stations;
- whether restrictions should be lifted to support fuel distribution, such as easing weight limits, fuel specifications, etc;
- whether a Declaration is required to support the response process and ensure CDEM-critical customers can be supplied²; and
- confirmation of the CDEM-Critical Customer list.

² It is expected that fuel companies will voluntarily take steps to ensure CDEM-Critical Customers are supplied, with or without a Declaration.

Fuel Prioritisation Level	Situation	Arrangements	CDEM Sector Actions	Fuel Sector Actions	MBIE Actions
Level A	No or very minor impact on fuel distribution	Oil company BAU Local CDEM EOC Active	Local EOC engages with local service stations as necessary	Normal business operation. Organisational business continuity plans used as needed. Clients are supplied under regular contractual arrangements. 'Off-the-street' customers purchase fuel as per normal.	BAU
Level B	Minimal or anticipated minimal impact on fuel distribution	BAU not enough No declaration CDEM Group ECC Active	Group Lifeline Utility Coordinator (LUC) confers with Local CDEM EOC	Commercial clients supply conditions altered, within actual contractual arrangements (at the discretion of Oil companies) to allow for CDEM critical fuel customers allocation. Explore other supply options – coordination, COLL, fuel specification changes (MBIE). Advise Group LUC of potential fuel shortages.	Monitor situation. Consider applicable OERS measures.
Level C	Significant impact on fuel distribution	State of Emergency is in force. Concerns about the availability of fuel to CDEM critical fuel customers.	LUC contacts Oil companies. LUC confers/coordinates with Oil companies. Convene SCE teleconference. Invoke Fuel Prioritization Arrangements (CDEM critical fuel customers list) Support to Oil companies as required.	Implement <i>Force-Majur</i> (option as needed). CDEM critical fuel customer list enacted. Supply CDEM critical fuel customers before all others. Estimate likely demand levels and re-supply options. Commercial customers and 'off-the-street' customers still serviced, albeit at a limited capacity.	Monitor situation. Consider applicable OERS measures.
Level D	Serious impact on fuel distribution/multi regional impact AND/OR Major impact to other lifeline utilities infrastructure AND Concerns of potential or actual evidence of 'panic buying'.	State of Emergency is in force. NCMC at Mode 3-4 Oil companies cannot operate to market conditions. Major impact to fuel distribution and/or regional supply.	NCMC LUC confers with Group LUC(s) and Oil companies – Refining NZ and COLL. Invoke Fuel Prioritisation Arrangements (CDEM critical fuel customers list). Arrange for additional security for service stations (as required). Support to Oil companies as required. NCMC confers for MBIE regarding need for rationing.	Non-market mechanisms. Designated service station re-supply. Sale restrictions (to end customers). Designated service stations in key locations are to supply specified CDEM critical fuel customers (or categories) exclusively. AND A limited number of service stations designated to supply fuel to non-critical customers. ³	Consider applicable OERS measures. Activate NESO if required.

Table 2: Fuel Prioritisation Response Matrix (Reference CDEM National Fuel Contingency Plan)

³ Alternative option is that certain lanes at service stations are designated for separate use of CDEM critical fuel customers.

Similarly, such a call may be convened by the National Crisis Management Centre (refer to the national fuel plan) if the impacts are wider than Auckland or by MED (if NESO arrangements are being activated).

2.3 CDEM-Critical Customers

The National Fuel Plan requires fuel companies to give priority to CDEM-Critical Customers (refer Attachment 1) once certain triggers are reached (Table 2). In an actual/pending fuel shortage, Auckland CDEM will review this list for currency and completeness and advise fuel companies of any change. However, until such time as advised otherwise, fuel companies should use this list as a basis for fuel supply priority allocation.

2.4 Method of Supplying CDEM-Critical Customers

The **fuel companies** are responsible for taking steps to ensure that supply to CDEM-Critical Customers can be maintained throughout the fuel supply disruption. At service stations, this may include:

- Designated service stations only supplying CDEM-Critical Customers;
- Designated lanes within service stations only supplying CDEM-Critical Customers;
- Monitoring stocks at fuel stations and closing the station to all except CDEM-Critical Customers until the station is re-supplied; and
- Allowing 'queue jumping' by CDEM-Critical Customers.

Fuel stations and unmanned truck stops most likely to be appropriate for servicing critical customers are highlighted in Attachment 2 (taking into account location to populations and priority routes, availability of back-up generation, volume of storage and vulnerability to hazards) but will depend on the circumstances of the event as these stations may not be operational.

Unless otherwise directed, fuel companies should make their own judgment as to the most effective way of providing continuous, accessible supply to CDEM-Critical Customers. As soon as any of the above mechanisms are acted on, fuel companies should advise Auckland CDEM (or the National Crisis Management Centre, if national fuel sector coordination is occurring), of the mechanisms being used.

Fuel companies are also required to coordinate with their distribution suppliers (trucks, mini-tankers, pump trucks) to support prioritisation of supply to designated fuel stations and to CDEM-Critical Customer sites.

CDEM-Critical Customers have responsibilities to support the above process, as outlined in Section 3.1.

Other direct CDEM measures to manage fuel supply, such as requisitioning, are considered a last resort and will generally only occur if fuel company measures to manage supply are considered by CDEM to be inadequate, or otherwise on request by the fuel companies.

The industry has the ability to borrow and loan stock to each other (at a terminal level) which may be used if a company is having difficulty maintaining supply to a lifeline customer.

2.5 Implementing Rationing Measures

In a CDEM Emergency where the Auckland Group Controller considers additional controls are needed to ensure continuation of supply to the public:

- The Group Controller will liaise with the National Controller and fuel companies to confirm this need; and
- The National Controller will then request MED to instigate regional/national rationing as required.

Further details on rational procedures are in the National CDEM Plan and MED Oil Emergency Response Strategy.

3. RESPONSE FROM OTHER CDEM-CRITICAL AGENCIES

3.1 CDEM-Critical Customer Responsibilities

CDEM-critical customers are responsible for:

- Ensuring that the staff and contractors required for critical response functions:
 - are aware of their CDEM-critical customer status;
 - have suitable identification (branded cars, company ID cards and/or a signed letter on letterhead); and
 - have means of payment if they are unable to use their contracted fuel company.
- Reasonably conserving fuel (to the extent possible, without impacting their ability to maintain core services).
- Giving priority restoration to support bulk fuel supply (notably water supplies to depots and facilities where mains water is a requirement for them to function and roads).
- Ensuring that non-critical staff and contractors do not unnecessarily take advantage of priority status.
- Having their own business continuity arrangements relating to fuel supply (priority supply arrangements, own stocks, etc).

3.2 CDEM-Critical Customer Response and Impact of Fuel Shortage

Attachment 1 details the CDEM-Critical Sectors, organisations and key contractors. Table 3 outlines the expected responses and issues of CDEM-Critical sectors.

Sector	Response / Comments on Impact of Fuel Supply Disruption
Police	Would conserve fuel for essential use as far as reasonable (though noting that in a disaster event usage will significantly increase).
Fire	As above. Noting that fire trucks typically used less than police vehicles, so would survive shorter outage.
Ambulance	Fuel requirements significantly increase in a disaster.
Roads	Short term outages have minimal impact, just delays to respond to issues if vehicles cannot be fuelled – impact is more severe in a disaster where road damage occurs. In power outage, need manual traffic mgt at major intersections. Longer outages would affect construction works.
Transportation General	All land/sea/air vehicles need fuel to function. With power outage also need generators/diesel for coolstores, port/airport operation.
Telecommunications	Gradual degradation of service, more so in rural areas. Major sites have backup generation but limited fuel stocks.
Broadcasting	Kordia has self-sufficient fuel at sites for 10 days. No information on broadcasters.
Electricity	In fuel shortage only, would scale back maintenance and attend to faults only. In disaster, fuel requirements increase by approximately 30 - 40%.
Water Supply / wastewater	Longer outages could impact on tanker supplies if no rain and stop chemicals/ supplies to treatment plants.
Solid Waste Mgt	Build-up of household rubbish and rubbish at refuse centre.
Hospitals	In power shortages would need diesel for generators.
Banks/Finance	Would need backup generators/diesel for banking / EFTPOS facilities if power out. Also, if telecommunications services down, so are EFTPOS.
Stormwater	Minimal impact unless need vehicles to respond to flooding event. In a power outage, the Three Kings building would require diesel for the generator.
Welfare	Primary providers are Red Cross, Salvation Army, MSD/WINZ. Others include Victim Support, Housing NZ, SPCA, Nest (Helicopter), Maritime NZ.
Gas	Rely on fuel for emergency response. Would conserve fuel for this purpose.

Table 3: Impact of, and response to fuel shortage by CDEM-Critical Customers

3.3 Fuel Requirements

Table 3 summarises the typical fuel requirements of CDEM-critical customers. This information is intended to assist the fuel industry in determining measures to ensure this demand can be met.

	Baseline			24hr Auckland Wide Power Failure			Two day Cyclonic Storm		
	Normal Demand			Total Demand			Total Demand		
	Petrol	Diesel	Jet	Petrol	Diesel	Jet	Petrol	Diesel	Jet
Police	5,479	219	1,096	8,479	12,219	1,096	8,479	12,219	1,096
Health	3,483	618	0	3,483	77,258	0	3,672	651	0
Ambulance	38	155	0	38	155	0	48	193	0
Fire	148	1,134	0	148	2,634	0	178	1,361	0
Airport	233	315	0	233	28,000	0	210	284	0
Air NZ			1,249,000						
Auckland Transport	1,000	10,000	0	1,000	10,000	0	2,000	20,000	0
Auckland Council SW	221	719	0	372	1,705	0	483	1,838	0
Watercare	758	4,582	0	758	120,960	0	807	122,577	0
Telecommunications	2,359	3,086	0	5,543	120,961	0	6,143	122,761	0
Electricity	1,075	3,523	5 0	1,212	39,059	5 0	1,318	9,395	5
NZTA	329	10,959	0 0	329	11,209	0 0	3,616	120,548	0
KiwiRail	115	329	0 0	115	2,329	0 0	115	2,329	0
Ports of Auckland	0	10,959	0	0	24,559	0	0	10,959	0
TOTAL	15,239	46,598	1,250,101	21,711	451,048	1,101	27,068	425,115	1,101

Table 3: Fuel Requirements of CDEM - Critical Customers (litres/day)⁴

4. OTHER CONSIDERATIONS

4.1 Management of Critical Resources

CDEM will support, as much as practical, the securing of critical resources for fuel companies during fuel supply disruptions. Critical resources for fuel companies are likely to be:

- Generators (if disruption is during a power outage)⁵
- Pumps to extract fuel from storage tanks (hand/air?)
- Road access
- Security guards

This does not reduce responsibility for fuel companies to have their own business continuity arrangements in relation to security, power-backups and other logistical requirements.

4.2 Communication

Communication between Priority Service Stations and CDEM will be dependent on the size and nature of the event. In smaller, localised events communication will be with the individual Priority Service Stations directly. For large scale, region wide events communication will be with fuel company representatives which in turn will be communicated with individual sites.

⁴ During the next Plan review, consideration will be given to the fuel consumption requirements of other CDEM-Critical customers including Auckland Council CDEM, welfare agencies, public transport operators (Veolia, etc) and the Defence Forces.

⁵ AELG reviewed the generator requirements of the lifeline utility and CDEM sectors in the "Auckland Region Generator Resources Review"

Communication will be via land line, cellular network or a live messenger depending on availability. For larger events where communication is with head office representatives, email will be used. Contact details for each priority site are included in the profiles of each site in Attachment 2.

4.3 Payment

Retail service stations accept payment through EFTPOS, manual credit card transactions, fuel cards or cash depending on availability. Truck stops require fuel cards.

In all cases, payment for fuel is the responsibility of each individual CDEM-Critical Customer.

4.4 Fuel Tank Inspections

In many cases, fuel tanks will need to be inspected following an emergency. In particular, for earthquakes or where inundation is involved such as flooding, storm surge or tsunami. If the fuel tanks are damaged and the quality of the fuel is affected, it will no longer be useable.

Many fuel companies will perform the first dip test themselves on the fuel to test for quality but if inspections are required, there are specialist contracting companies that perform that task. Gilbarco (NZ) and ECL Group are two companies that undertake fuel tank inspections in Auckland.

Although arranging fuel tank inspections and ensuring fuel quality is the responsibility of the fuel companies, CDEM may be able to assist with prioritising sites as necessary if it becomes a critical resource.

4.5 Longer Term Mitigation Options

Fuel companies should consider work to enable some flexibility around unloading fuel from depots and ports. CDEM-Critical Customers should consider their own fuel stores to improve their own business continuity.

ATTACHMENT 1: LIST OF CDEM-CRITICAL CUSTOMERS

	Key Agency	Named Key Contractors
CDEM	Auckland Council	
Health/ Hospitals	Auckland Regional Public Health Services	
	Counties Manukau District Health Board	
	Waitemata District Health Board	
	Auckland District Health Board	
Emergency Services	St John	
	Police	
	Fire	
Transport	Auckland International Airport	
	Airlines	
	Auckland Transport - Roads	HEB Construction, Blacktop, Downer EDI, Fulton Hogan, CSL Infrastructure, Traffic Systems and Fusion
	Auckland Transport - Public Transport Operators	
	Joint Transport Operations Centre	
	KiwiRail	
	Ports of Auckland	
	Coastguard	
New Zealand Transport Agency		
Water	Watercare Services Limited	
Stormwater	Auckland Council	Transpacific Industries, Lendlease and Downer
Solid Waste	Auckland Council	
Telecom- munications	Telecom	
	Chorus	
	Vodafone	Downer EDI
	Kordia	
	2 degrees	
	Vector-Communications	
	Teamtalk	
Electricity / Gas	Transpower	Transfield Service, Electrix
	Vector	Northpower, Electrix
	Contact Energy (Otahuhu)	
	Counties Power	
	Mighty River Power (Southdown Cogen facility – 120MW)	
Contact Energy (Otahuhu A & B Power Station–40 & 380MW)		
Fuel	Refining NZ	
	Wiri Oil Services Ltd	
	BP Oil Ltd (including retail outlets)	
	Mobil Oil NZ Ltd (including retail outlets)	Kauriland, JCI and Fuelquip
	Z Energy (including retail outlets)	
	Caltex NZ Ltd (including retail outlets)	
	Gull Petroleum Ltd (including retail outlets)	
	Joint User Hydrant Interplane (JUHI)	
Wynyard Wharf Oil Terminal (Stolthaven)		
Welfare	Agencies specified depending on the emergency type.	
Other	Radio New Zealand Ltd	
	Television New Zealand Ltd	
	Radio B Network of NZ	
	Defence Forces (Army, Navy)	

ATTACHMENT 2: PRIORITY SERVICE STATIONS

The following fuel stations are considered to be the most likely for designation as priority sites servicing CDEM-Critical Customers. This has been assessed considering the location to populations, priority routes, availability of back-up power, volume of storage, proximity to emergency services and vulnerability to hazards. However the priority for re-opening will depend on the situation at the time, the areas most affected and the resources available.

North-West Auckland

Service Station Name	Address	Location	Phone Number	Fuel Supplier
BP Connect Dairy Flat*	State Highway 1, Dairy Flat	Dairy Flat	09 448 5175	BP
BP Connect Glendene^	Cnr Norcross Ave & Te Atatu Rds	Glendene	09 836 7730	BP
Caltex Upper Harbour Drive	73-77 Paul Matthews Rd	Albany	09 414 2030	Chevron
Caltex Wellsford	Rodney St	Wellsford	09 423 7766	Chevron
Gull Henderson Valley^	Cnr Henderson Valley and Forest Hill Rd	Henderson Valley	09 838 4291	Gull
Helensville Service Station	22 Commercial Rd	Helensville	09 420 8725	Z
Mobil Constellation Drive	48 Constellation Dr	Mairangi Bay	09 478 3838	Mobil
Mobil Hillside	140-146 Wairau Road	Glenfield	09 443 7191	Mobil
Mobil Lincoln Road	Cnr Lincoln Rd & Central Park Dr	Henderson	09 837 4774	Mobil
Mobil Oteha Valley	Cnr Fairview & Oteha Valley Rd	Albany	09 476 0938	Mobil
Mobil Red Beach	72 Red Beach Rd	Red Beach	09 426 7905	Mobil
Mobil Royal Heights	130-136 Royal Rd	Massey	09 832 5330	Mobil
Z Glen Park	241 Glenfield Road	Hillcrest	09 419 7530	Z
Z Lincoln Road	198 Lincoln Rd	Henderson	09 837 6110	Z
Z Massey North	Cnr SH 16 & Asti Lane	Massey	09 832 0369	Z
Z Sunnybrae	37 Northcote Rd	Takapuna	09 419 8149	Z
Z Te Atatu	402 Te Atatu Rd	Te Atatu North	09 834 6309	Z
Z Wilmot Motors	Cnr Mill Ln & Whitaker Rd	Warkworth	09 425 8439	Z

Central Auckland

Service Station Name	Address	Location	Phone Number	Fuel Supplier
BP Connect Newmarket^	433 Khyber Pass Rd	Newmarket	09 523 0832	BP
Caltex Balmoral	Cnr Sandringham & Balmoral Rd	Balmoral	09 815 9403	Chevron
Caltex Fanshaw Street	163-167 Fanshawe St	Auckland City	09 307 9095	Chevron
Caltex Stanley Street	30 Stanley St	Auckland City	09 309 5354	Chevron
Caltex Sylvia Park	280 Mt Wellington Highway	Mt Wellington	09 570 7429	Chevron
Gull Kingsland^	384-392 New North Rd	Kingsland	09 845 2952	Gull
Mobil Glen Innes	304 Apirana Avenue	Glen Innes	09 570 1513	Mobil
Mobil Greenlane	60 Greenlane Rd East	Greenlane	09 529 0652	Mobil
Mobil Parnell	506 Parnell Rd	Parnell	09 373 4054	Mobil
Mobil Pt Chevalier	1177 Great North Rd	Pt Chevalier	09 815 0260	Mobil
Z Beach Road	150 Beach Rd	Parnell	09 373 5268	Z
Z Kepa Road	154 Kepa Rd	Orakei	09 521 0294	Z
Z Mount Albert	770-774 New North Rd	Mt Albert	09 846 3964	Z
Z Ponsonby	5-9 Williamson Ave	Ponsonby	09 378 6938	Z
Z Royal Oak	700 Mt Albert Rd	Royal Oak	09 624 1102	Z
Z Sylvia Park	510 Mt Wellington Hwy	Mt Wellington	09 573 1231	Z
Z Waikaraka	165 Neilson St	Onehunga	09 636 6153	Z

*Generator onsite, ^Generator capable

South Auckland

Service Station Name	Address	Location	Phone Number	Fuel Supplier
BP Connect Bombay*	Mill Rd	Bombay	09 236 1080	BP
BP Connect Flatbush^	300 Te Irirangi Dr	East Tamaki	09 271 0710	BP
BP Connect Mangere	154 Coronation Rd	Mangere	09 622 4310	BP
BP Connect Pacific^	Cnr Great South & Kerrs Rd	Manukau	09 263 7810	BP
Caltex Bombay	Mill Rd	Bombay	09 236 0471	Chevron
Caltex Manurewa	324 Great South Rd	Manurewa	09 267 1786	Chevron
Gull Takanini^	330 Great South Rd	Manurewa	09 269 8514	Gull
Gull Te Irirangi Drive^	457 East Tamaki Rd	East Tamaki	09 271 2692	Gull
Mobil Highland Park	Cnr Pakuranga Rd & Aberfeldy Ave	Highland Park	09 535 4424	Mobil
Mobil Manukau City	639 Gt South Rd	Manukau	09 262 3959	Mobil
Mobil Otara	138-142 East Tamaki Rd	Otara	09 274 0171	Mobil
Mobil Papatoetoe	73 East Tamaki Rd	Papatoetoe	09 278 0506	Mobil
Mobil Pukekohe	Cnr Manukau Rd & Massey Ave	Pukekohe	09 237 1240	Mobil
Z Botany Downs	550 Te Irirangi Dr	Botany Downs	09 272 2105	Z
Z Lakewood Court	742 Gt South Rd	Manukau	09 263 6743	Z
Z Manurewa	1 Alfriston Rd	Manurewa	09 267 0967	Z
Z Papakura North	345 Gt South Rd	Takanini	09 296 1199	Z
Z Skyway	George Bolt Memorial Dr	Auckland Airport	09 275 9082	Z
Z Tom Pearce Drive	Tom Pearce Dr	Auckland Airport	09 256 0911	Z

Commercial and industrial sites with private diesel storage were investigated as priority sites for supplying CDEM-Critical Customers in an attempt to reduce issues around public demand and possible panic buying. However, due to the difficulties involved in accessing restricted areas, accurately measuring and recording fuel supply and arrangements for payment of the fuel, these have been excluded. 19 commercial truck stops in the Auckland Region have been listed below as these are often unmanned and may be more readily accessible during an emergency.

Truck Stops

Truck Stop Name	Address	Location	Fuel Supplier
Bombay Truckstop	Mill Rd	Bombay	BP
BP Connect Dairy Flat MSA	State Highway 1	Dairy Flat	BP
BP Ti Rakau	Harris Rd	East Tamaki	BP
Caltex Auckland Airport Diesel Stop	Laurence Stevens Dr	Manukau	Chevron
Caltex Bombay Diesel Stop	Mill Rd	Bombay	Chevron
Caltex Dairy Flat Diesel Stop	314 Main Rd	Albany	Chevron
Caltex Onehunga Diesel Stop	383 Neilson St	Onehunga	Chevron
Caltex Otahuhu Diesel Stop	27 Saleyards Rd	Otahuhu	Chevron
Caltex Stanley Street Diesel Stop	30 Stanley St	Auckland City	Chevron
Caltex Upper Harbour Diesel Stop	73-77 Paul Matthews Rd	Albany	Chevron
Caltex Warkworth Diesel Stop	5-9 Morrison Dr	Warkworth	Chevron
Caltex Wiri Station Rd Diesel Stop	149-187 Wiri Station Rd	Wiri	Chevron
Mangere Truckstop-OPT	20 Verissimo Dr	Mangere	BP
Onehunga Truckstop-OPT	Neilson St	Onehunga	BP
Papakura MSA Truck Stop	Southern Motorway	Papakura	BP
Z TS Constellation Dr	36 Constellation Dr	Mairangi Bay	Z
Z TS Regal Haulage	651 Airport Rd	Tamahere	Z
Z TS Silverdale	100 Foundary Rd	Silverdale	Z
Z TS Sylvia Park	Sylvia Park Rd	Mt Wellington	Z

*Generator onsite, ^Generator capable

The 54 priority service stations were initially selected based on proximity to populations and priority routes, availability of back-up power, tank volume and refilling regularity. All of the selected sites have been assessed against the likelihood of being affected by different types of natural hazards. Although the tables below outline the vulnerability of the selected priority sites against these hazards, it is only to provide an indication of which sites might be available during different emergency situations.

North-West Auckland – Priority Sites Vulnerability to Hazards

	Flooding	Landslide	Earthquake	Wind/Fire	Volcanic Eruption	Tsunami	Storm Surge
BP Connect Dairy Flat	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
BP Connect Glendene	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Caltex Upper Harbour Dr	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Caltex Wellsford	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Unlikely or rare	Unlikely or rare	Unlikely or rare
Gull Henderson Valley	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Helensville Service Station	Unlikely or rare	Possible	Unlikely or rare	Possible	Unlikely or rare	Unlikely or rare	Unlikely or rare
Mobil Constellation Dr	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Mobil Hillside	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Mobil Lincoln Road	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Mobil Oteha Valley	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Mobil Red Beach	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Mobil Royal Heights	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Z Glen Park	Unlikely or rare	Possible	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Z Lincoln Road	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Z Massey North	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Z Sunnybrae	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Z Te Atatu	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Z Wilmot Motors	Unlikely or rare	Unlikely or rare	Almost certain or likely	Possible	Possible	Unlikely or rare	Unlikely or rare

Key Almost certain or likely Possible Unlikely or rare

Central Auckland – Priority Sites Vulnerability to Hazards

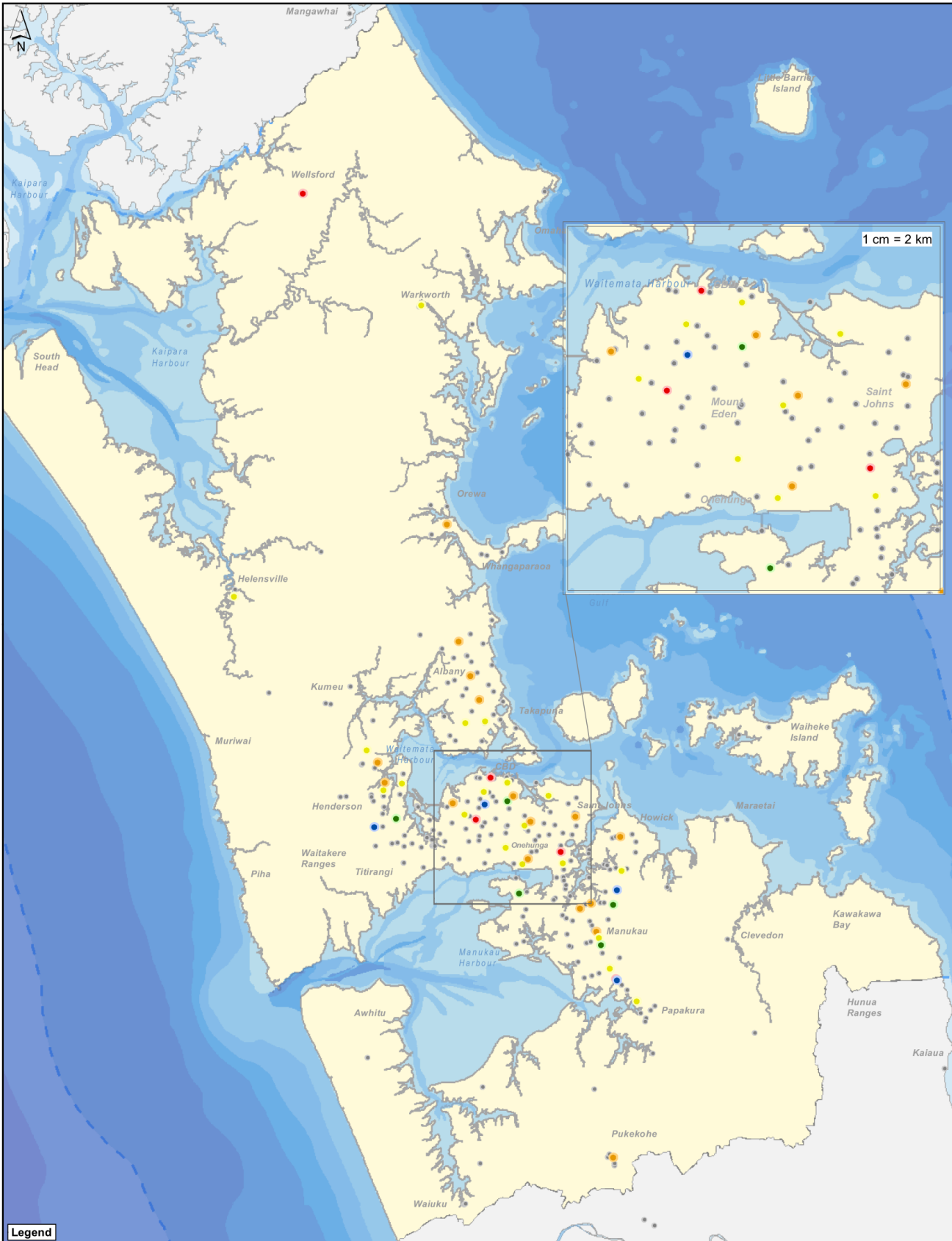
	Flooding	Landslide	Earthquake	Wind/Fire	Volcanic Eruption	Tsunami	Storm Surge
BP Connect Newmarket	Possible	Unlikely or rare	Almost certain or likely	Possible	Almost certain or likely	Unlikely or rare	Unlikely or rare
Caltex Balmoral	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Almost certain or likely	Unlikely or rare	Unlikely or rare
Caltex Fanshaw Street	Unlikely or rare	Possible	Almost certain or likely	Possible	Possible	Possible	Possible
Caltex Stanley Street	Possible	Unlikely or rare	Almost certain or likely	Possible	Possible	Unlikely or rare	Unlikely or rare
Caltex Sylvia Park	Unlikely or rare	Unlikely or rare	Almost certain or likely	Possible	Possible	Unlikely or rare	Unlikely or rare
Gull Kingsland	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Almost certain or likely	Unlikely or rare	Unlikely or rare
Mobil Glen Innes	Possible	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Mobil Greenlane	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Mobil Parnell	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Almost certain or likely	Unlikely or rare	Unlikely or rare
Mobil Pt Chevalier	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Z Beach Road	Possible	Unlikely or rare	Almost certain or likely	Possible	Possible	Possible	Possible
Z Kepa Road	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Almost certain or likely	Unlikely or rare	Unlikely or rare
Z Mount Albert	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Almost certain or likely	Unlikely or rare	Unlikely or rare
Z Ponsonby	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Z Royal Oak	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Almost certain or likely	Unlikely or rare	Unlikely or rare
Z Sylvia Park	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Almost certain or likely	Unlikely or rare	Unlikely or rare
Z Waikaraka	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Almost certain or likely	Unlikely or rare	Unlikely or rare

Key Almost certain or likely Possible Unlikely or rare

South Auckland – Priority Sites Vulnerability to Hazards

	Flooding	Landslide	Earthquake	Wind/Fire	Volcanic Eruption	Tsunami	Storm Surge
BP Connect Bombay	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
BP Connect Flatbush	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
BP Connect Mangere	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Almost certain or likely	Unlikely or rare	Unlikely or rare
BP Connect Pacific	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Caltex Bombay	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Caltex Manurewa	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Gull Takanini	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Gull Te Irirangi Drive	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Almost certain or likely	Unlikely or rare	Unlikely or rare
Mobil Highland Park	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Mobil Manukau City	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Mobil Otara	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Mobil Papatotoe	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Mobil Pukekohe	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Unlikely or rare	Unlikely or rare	Unlikely or rare
Z Botany Downs	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Z Lakewood Court	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Z Manurewa	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Z Papakura North	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Z Skyway	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare
Z Tom Pearce Dr	Unlikely or rare	Unlikely or rare	Unlikely or rare	Possible	Possible	Unlikely or rare	Unlikely or rare

Key Almost certain or likely Possible Unlikely or rare



Legend

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AELG Lifeline Critical Sites

Petrol Stations

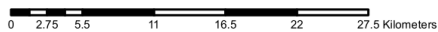
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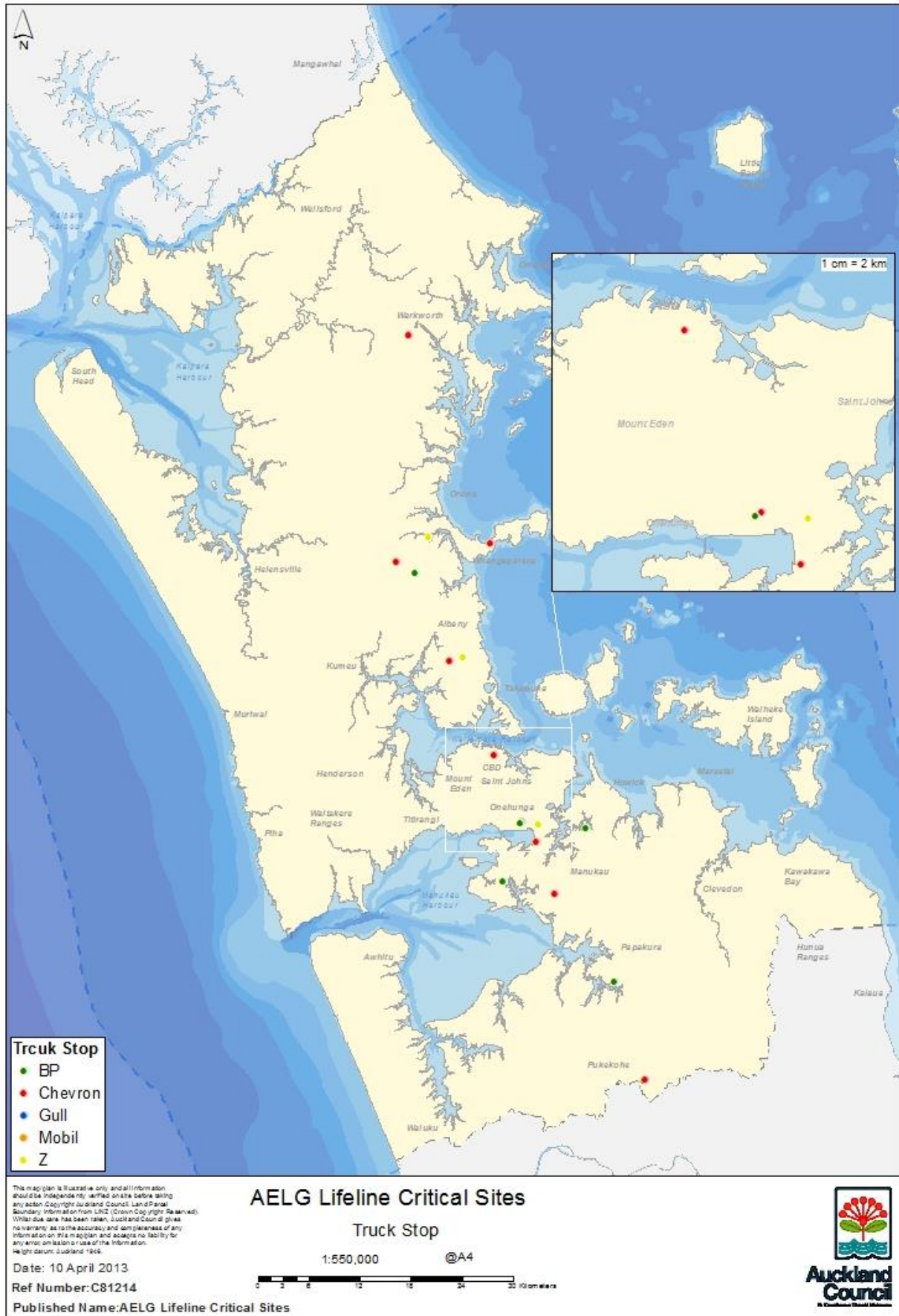
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Auckland Council
Te Kauhēro o Tamaki Makaurau



ATTACHMENT 3: NATIONAL AND AUCKLAND FUEL SUPPLY

National Fuel Market

New Zealand's demand is supplied by five oil companies; BP, Chevron (Caltex, Challenge), Gull, Mobil and Z. Any other retailers (e.g. supermarkets, Gasoline Alley) are supplied by one of these companies.

In the Asia Pacific region New Zealand is a small market with a sizeable land mass which is relatively remote from the main regional trading hub of Singapore. New Zealand has one refinery, owned and operated by the Refining NZ whose four customers (BP, Chevron, Mobil and Z) all market oil products nationally. As well as securing product from Refining NZ, these companies import product directly. Gull is not a customer of Refining NZ and only markets oil products in the central and upper North Island regions. Gull imports all of its product requirements via their Mount Maunganui storage terminal.

New Zealand's fuel demand is shown in Table 4⁶. This table also indicates how much of this demand is produced at Marsden Point versus imported from offshore refineries.

Product	Demand	Local (%)	Imports (%)	Exports (%)
Petrol	3,238 mln l	67 %	33 %	- %
Jet Fuel	1,421 mln l	79 %	21 %	- %
Diesel	2,785 mln l	70 %	30 %	- %
Fuel Oil	553 mln l	117 %	- %	17 %
Total	7,996 mln l	73 %	28 %	1 %

Table 4: New Zealand Demand by Product (2005)

Refining New Zealand

The Refining NZ refinery at Marsden Point is a tolling refinery⁷ which refines the crude oil supplied by its customers into oil products in accordance with customer's requirements. The crude oil delivered to New Zealand is predominantly Middle East and Asian crude with a small portion of local crude also processed. Crude is shipped on large vessels which carry between 105 and 145 million litres. Refining NZ requires one of these vessels about every seven to ten days.

Marsden Point is a complex refinery with several parallel systems allowing it to continue to function even with loss of one unit. It can be viewed as a de-integrated structure able to provide jetties, storage capacity (including blending capability), refining capacity and pipeline distribution, which provides significant flexibility for its users.

Products produced at Marsden Point are delivered from the refinery either via the Refinery to Auckland pipeline (RAP) to the WOSL near Auckland Airport, or shipped via Coastal Oil Logistics Ltd (COLL) to various ports around the coast of New Zealand. There is also a small truck loading facility (TLF) located beside the refinery (linked by pipeline) which Refining NZ's customers use.

Inventory held at the refinery varies but typically it has about 20% of the country's useable product stock (approximately five days of national demand).

Imported Refined Product

The remaining product requirements for New Zealand are imported by the five oil companies. Historically a significant proportion of imports were sourced from Australia, however with the continued tightening of product specifications, growing demand (in New Zealand and Australia) and the mothballing of Mobil's Adelaide Refinery,

⁶ NZ Energy Data File, Sept 2006 (data up to 2005)

⁷ Refining NZ does not own any crude oil or oil products throughout its refining process

there has been a significant swing towards sourcing products from Singapore and other Asian countries like Korea.

A typical import from Singapore will take about 16 days versus 5 days from Australia with the average lead time (prior to vessel loading) for arranging an import being two months. In an emergency situation this may take less time but will still take at least three weeks to source a supplier who can produce suitable products and to arrange the shipping. This suggests that it would be about six weeks minimum before an import would arrive from the time the need for an import has been identified.

National Distribution

Coastal Oil Logistics Ltd (COLL)⁸ is a joint venture company owned by BP, Chevron, Mobil and Z (COLL's customers) which is used as the primary means of shipping oil products from Marsden Point to 10 ports around New Zealand. These ports are Auckland (Wynyard Wharf for diesel only), Mount Maunganui, Napier, New Plymouth, Wellington, Nelson, Lyttelton, Timaru, Dunedin and Bluff. COLL operates two bulk product ships which are capable of carrying about 40-45 million litres of fuel per voyage, depending on the mix of products being carried. COLL also ships indigenous crude from New Plymouth to Marsden Point when requested by customers.

Separately COLL oversees a stock ownership system for its 4 customers, which share distribution with joint use of COLL and have contracted use of each others port terminals. These companies operate a national stock ownership system which enables each to draw product from any location at any time subject to having access arrangements with that storage provider. The right to draw stock from the system is subject to having a positive stock balance. The system calculates stock ownership derived from a combination of refinery production as it accrues to each Refining NZ customer and as supplemented by periodic imports.

When there is a stock shortage (or possible restrictions) stocks are allocated between companies based on their national ownership and normal demand requirements at that location. The four companies using COLL loan and borrow stock between each other.

All companies also import finished product direct to port terminals (Gull imports 100% of its supply). Most imports come from Asia and take at least 16 days shipping time.

Overview of Auckland's Fuel Supply

The Auckland region consumes about 36% of New Zealand's oil products. The primary supply channel into Auckland is the RAP from Marsden Point to WOSL, which provides around 95% of Auckland's fuel.

WOSL is located near Auckland Airport on the southern side of the region (near the Manukau Harbour). Other supply points into the region include:

- Wynyard Wharf, where COLL vessels deliver diesel only.
- Marsden Point TLF, from where some petrol and diesel is trucked into the north of the Auckland region.
- Mount Maunganui, from where Gull trucks all of its petrol and diesel to its service stations in the North Island, and from where BP and Mobil supply their 98 octane petrol to the central and upper North Island. The other oil companies also use Mount Maunganui as a backup supply location to WOSL.

Marsden Point TLF and Mount Maunganui are also used to provide fuels (via trucking) to the geographic areas surrounding these locations (i.e. Northland and Bay of Plenty / Central North Island respectively).

Refinery to Auckland Pipeline⁹

The RAP is a buried 250mm diameter pipeline which is about 170km long containing about nine million litres of fuel. This pipeline is used to pump petrol, jet fuel and diesel from Marsden Point to WOSL and can currently pump products at a rate of 370m³ per hour. Future upgrades are possible with the pipeline ultimately being

⁸ From COLL website

⁹ From Refining NZ website and Annual Report 2006

capable of pumping products at a rate of 415m³ per hour. Based on the current demand the pipeline is operating around 320m³ per hour or 85-90% of its current capacity.

As the RAP has more capacity than WOSL's current demand requirement stocks are able to be rebuilt at about 1.3 million litres per day. At this rate it would take about 36 days to rebuild stocks back to the current levels after a seven day outage.

Wiri Oil Services Limited

WOSL is used by BP, Chevron, Mobil and Z and operates a large truck fill stand to allow these customers to load and distribute fuel to their customers around the region. WOSL also pumps jet fuel to the Joint User Hydrant Interplane (JUHI). Table 5 outlines WOSL's tankage configuration and the average stock holding.

Product	Average Stock	Tank Heels (all tanks)	Tank Tops (all tanks)	Number of Tanks
Premium	7 mln l	2 mln l	16 mln l	2
Regular	20 mln l	5 mln l	41 mln l	2
Diesel	14 mln l	2 mln l	24 mln l	2
Jet Fuel	20 mln l	3 mln l	35 mln l	3
Total	61 mln l	12 mln l	116 mln l	9

Table 5: WOSL Infrastructure

The terminal stores petrol, jet fuel and diesel in nine bulk storage tanks with a combined storage capacity of over 100 million litres. On average WOSL holds around 61 million litres of fuel, which provides about 6.5 days cover, although this varies depending on the product. However at any point in time one product will be low (i.e. it will be the next product supplied from the RAP) thus at any time the inventory available for a product could be as low as 4 days or as high as 9 days. In the event that the RAP is significantly damaged Refining NZ has advised that a temporary repair to the pipeline should be completed and ready for use within seven days.

A seven day RAP outage would cause problems for supply, especially for the product that was the next to be supplied by the pipeline. In the case of jet fuel there is another 1.5-2 days stock at the JUHI, giving a total of 7-8 days. However this would not be enough to cover a seven day disruption as it would take at least two days to get more jet down the pipeline and certified for release once RAP was available. The industry is planning to build another jet tank at JUHI (2012) which would increase jet inventories by about 1.5 days average demand. This would ease the shortage in a seven day RAP shutdown although the benefit may be offset by demand growth.

There is also a pipeline from the WOSL terminal to Auckland airport which pumps jet fuel to the JUHI terminal (this has three bulk storage tanks). These tanks then supply the underground hydrant system that is reticulated around the tarmac at Auckland Airport and is used for supplying fuel to both domestic and international aircraft.

While jet inventories are kept close to their operational maximums at WOSL (to give maximum days cover), petrol and diesel could be operated at higher average stock levels (by about a day for diesel and 1.5 days for petrol). If higher inventories were held, a seven day RAP shutdown would be easier to manage although there is a significant cost associated with holding higher inventories. From June 2013, Auckland Airport will have five fuel tanks, double the current capacity.

Wynyard Wharf

Stolthaven New Zealand own and operate an oil terminal located on Wynyard Wharf that currently provides an alternative supply of diesel than that provided by Wiri Oil Services over the RAP pipeline. The Wynyard Wharf terminal is supplied with diesel via COLL's coastal vessels. It has the capability to load/unload vessels from that site. The site also has a small TLF (capable of loading one truck at a time¹⁰) which can be used to load diesel onto trucks for supply to customers in the region.

¹⁰ It could be modified in an emergency to load more, if HAZNO regulations were relaxed.

There are two diesel tanks which can hold a maximum of 12 million litres which can provide a useful (but limited) back up for diesel supply into the Auckland region. Historically the terminal also stored marine fuel oil for the shipping industry and this infrastructure is still in place but no longer in use. Marine fuel oil is now transported from Marsden Point refinery on the Awanui, a bunker tanker owned by SeaFuels, and pumped directly into ships berthed at Ports of Auckland.

As the Wynyard Wharf area of the waterfront is earmarked for redevelopment, the current expectation is the site will be closed in a staged manner between 2016 and 2022 as the lease expires.

Mount Maunganui

There are several bulk storage terminals located at Mount Maunganui including Gull's only terminal which has a maximum capacity of 78 million litres¹¹. While Mount Maunganui is relatively close to Auckland (compared to most other ports) it is still a long haul via truck, with typically only two deliveries able to be made on each shift, versus four or five deliveries from WOSL.

For the oil companies who use WOSL the Mount does play a backup role to WOSL. If supplies at WOSL are tight then the delivery boundary (south of Auckland) would move closer to WOSL (reducing WOSL demand) with the resulting shortfall supplied from the Mount by truck. However it would be impossible to supply all of Auckland's demand from Mount Maunganui as there would be insufficient suitable tankers and a lack of suitably qualified tanker drivers.

Marsden Point Truck Loading Facility

This terminal is a small facility located next to the Marsden Point Refinery and has six tanks which contain diesel and both grades of petrol. The tanks are filled via a pipeline from Marsden Point. This facility is used by BP, Chevron, Mobil and Z to supply their customers and service stations in the Northland region. Like Mount Maunganui this facility also plays a backup role to WOSL with trucks delivering into northern parts of Auckland (north of the Harbour Bridge) at times, particularly if there is a shortage of product at WOSL.

Distribution by Truck

Most fuel is delivered to customers and service stations via trucking. The trucks employed consist of modified trucks (with full electrical isolation systems) and purposely built trailer units (set up to connect safely to the fill stands at each terminal). A trailer unit can hold up to 35,000 litres. These trucks and trailers may be owned by oil companies, their distributors or by independent transportation firms.

Over the last 15 years trucking optimisation has improved significantly via using double shifts and smarter scheduling systems, resulting in fewer units delivering more fuel.

Like all aspects of the oil industry the number of operational truck and trailer units is sized around the trucking requirement. Anecdotal comments suggest that there will only be a few spare or under utilised units around NZ that could be relocated in an emergency. Unmodified trucks and other bulk trailers are not able to be used for caring oil products. Another issue is availability of qualified drivers who have specialist training (this training can take several weeks to complete).

In a major supply disruption or emergency situation optimising the trucking supply patterns will be a key part of the supply solution. As well as shifting under utilised trucks into the Auckland region, smaller or remote service stations (e.g. rural locations) may be temporarily closed to reduce the number of deliveries that are required to be made.

Jet fuel is the most difficult product to truck into the region with the nearest supply point (for trucks) being Wellington. However, trucking from Wellington provides a very inefficient use of trucking resource with one round trip taking 24 hours and two drivers.

¹¹ Gull Website

ATTACHMENT 4: INDUSTRY RISK MITIGATION AND READINESS

Continuity Arrangements at Key Sites

Refinery and RAP

Refining NZ has a very good reliability record and is rated in the top quartile for reliability for refiners in Asia-Pacific by external benchmarking.¹² Its location was also specifically chosen as a region where natural disasters were lower risk (e.g. low earthquake risk). Given the amount of inventory normally carried at Marsden Point, an unplanned disruption of six to 12 days (depending on actual inventories at the time of disruption) can be managed without any disruption to supplies. Planned shutdowns for extended periods are routinely managed without disruption. Note that a series of shorter unplanned disruptions would have a cumulative effect as it takes a couple of months to build inventories following a disruption.

A key outside dependence for the refinery is electricity supply, as it's demand is too high for a back up facility, and loss of supply will result in a shutdown (though it is supplied from the national grid which minimises the risk of outage). The RAP is also dependent on electricity for pumps, however this could operate on reduced supply with generator backup.

While Refining NZ has regularly tested continuity plans, their prime focus is preventative maintenance of both assets. Refining NZ undertakes regular monitoring and maintenance on RAP and holds spare pipeline. Repairs on a minor leak could be executed within two to three days. With significant damage to the pipeline, temporary repairs would be completed within five days with another two days commissioning. Loss of the intermediate pumping stations on the pipeline will only slow the pumping rate. Pipeline ruptures have an associated explosive risk.

WOSL

There are a number of contingency plans in place to ensure continued operation in a crisis. Wiri is dependent on external power supply and mains water for fire fighting. A permanent backup generator was installed in 2007.

The Wiri terminal is designed to the AS/NZ 1940 fire protection standard for flammable products and there is foam available on site and direct foam injection for tanks along with a surface water system. The basis of design is to avoid fire in any one tank spreading to other tanks.

All jet fuel is pumped to Auckland Airport via a pipeline to JUHI. Spare pipeline is kept on site and repairs should be able to be completed (possibility temporarily) within two days. There are contingencies to truck jet fuel between Wiri and JUHI, though truck discharge facilities at JUHI are limited. Truck supply can keep JUHI topped up during a temporary shutdown but not meet full demand. Jet inventories at JUHI are normally kept at maximum operating levels for contingency.

There are established processes at WOSL to allocate available product between the companies for as long as there is a restriction in supply.

Trucking

Some oil companies control a dedicated fleet and others contract with a dedicated third party haulage company. There is also a limited amount of additional spot resource available. Companies have some ability to rework schedules and reallocate resources from areas of the country where there is not a problem. These actions are covered in their contingency plans and include things such as:

- Spot contracts with third party provides for limited additional resource
- Review and amendment of scheduling rosters (a regular activity)
- Reallocation resources from other regions
- Concentrating deliveries on largest most efficient sites
- Concentrating supply to lifeline utility customers

¹² MED report by Covec/Hale & Twomey: Oil Security 2004 (pg 38)

Industry Risk Scenarios and Mitigation Plans

This section looks at the impacts of various scenarios, how the industry would respond and the overall impact on fuel supply. The scenarios are split into two sections, those with a short term impact (up to a few days) and those likely to result in a longer term disruption (over a week).

Short Term Disruptions

These reflect scenarios where there is significant short term disruption to the region (e.g. power failure) but typical inventory holdings should mean fuel supply is not disrupted. The only significant demand change from priority customers (Attachment 1) was for diesel, as summarised in Table 4. While the increase in diesel demand is significant in the second and third scenarios shown in Table 4, supply through WOSL (assuming the RAP is operating) could easily meet this incremental demand. Even if the RAP was not available for a short period, the typical days cover would only reduce from 7.5 days to 6 days. This is more than the expected length of any emergency and may also be offset by a reduction in normal demand during the emergency.

The main issue would be that in an Auckland wide power outage where most service stations will not be operational. Diesel supplies to companies running generators should be maintained as WOSL has back up power and trucks available assuming the roads are safe to use.

Long Term Disruptions

These scenarios focus on long term disruption caused by major incidents to the supply infrastructure such as natural disaster (the Refinery is within modelled tsunami inundation zones), terrorism, fire/explosion or oil spill. The scenarios and their impacts are summarised in Table 7.

The refinery is both a processing facility and a terminal, so there are scenarios with the loss of both functions or just the loss of processing facilities. Most disruption to RAP should be repaired within a week, however a worst case outage of three weeks is assessed. A WOSL outage of one month is assessed, as that covers the most extreme disruption (the shortage caused would reduce in an extended outage as alternative supply arrangements would get established).

The loss of other supply infrastructure (Mt Maunganui, TLF) may have a significant impact in its region but they will not have a significant impact on total Auckland supply so are not covered in the scenarios.

Other scenarios are likely to have less impact. Loss of a coastal tanker would affect other parts of the country and be managed by contracting the use of import tankers. International shortages are discussed in Attachment 4.

This document does not assess the risk of such events¹³. There may be value in a more comprehensive risk assessment. There are smaller/shorter versions of each of these scenarios that could still have a significant effect. However the impact will be less than that shown below so any processes established for the larger scenarios should be sufficient to manage smaller ones. Other events that might be suggested (truck strikes, blockades, etc.) could cause problems but are likely to be a smaller scale than these scenarios (scenario 5/6) so responses designed for those scenarios would be suitable.

Panic buying could make the situation worse, although this may be managed. For instance, in a worst case if all the cars in New Zealand were on average kept at one third full (reasonable assumption) and panic buying increased the average to two thirds full, inventories would only go down by 45 million litres, about 25% of the stock companies carry in terminals in the country. The government also has the legal ability to implement petrol rationing if necessary to prevent such occurrences, though arrangements to give effect to this are not yet in place.

Fuel Industry Response Arrangements

¹³ This was done in the MED paper on Oil Security by Covec/Hale & Twomey 2004. Those assessments are shown in Table 4.

For any major event that has significant regional or national impacts it would be expected that the NESO response group would be formed to help the Government to manage the shortage.

Management of shortage within each fuel company

If there is risk of a shortage, each oil company will form a crisis management team of senior representatives which will take action depending on the nature of the crisis and its likely duration.

Management of shortage across the industry

Other than NESO (activated under government control) there are no pan-industry groups automatically activated in a crisis. However where relevant to the crisis and where the Commerce Act allows, the oil industry has shown in the past that cross industry groups can be set up. In fact, the refinery, COLL and WOSL routinely deal with product constraints and allocation of product between the four contributing companies and would continue to provide this service in a crisis. Therefore many of the cross industry groups required to manage a shortage exist.

Management of short term disruptions

For most short-term disruption scenarios the oil industry has the ability to respond and manage any temporary supply disruptions. They carry sufficient stock and resources to manage such events. For example, many of the lifeline utilities are supplied directly by truck from WOSL (especially those using diesel for back-up generators) and these supplies will not be affected by a general power outage that affects the service station network. There are some specialised companies who also provide the direct delivery service who will be important in a crisis (as experienced in the Auckland 1998 power outage).

It should be noted the oil industry will not let their drivers deliver fuel if the roads or conditions are considered dangerous. This happens relatively frequently in New Zealand from severe weather events. Typically this might cause delivery disruption for two to three days but typically only results in very localised minor outages (the odd service station). Usually demand falls substantially for the same reason the industry can't deliver. Users of diesel generators should not expect immediate re-supply if conditions are unsafe.

Table 7: Long Term Scenario Summary

	L1. Major International Event	L 2. Major unplanned refinery outage (all facilities) for more than a month	L 3. Major unplanned refinery outage (processing) for more than a month	L 4. Partial or three week unplanned refinery outage	L 5. Pipeline (RAP) disruption for three weeks	L 6. Wiri terminal unplanned outage – one month
Location	Disruption to world market supplies.	Event would have national impact although larger issue in Auckland. Likely to be an external or natural event (eg: tsunami).	Event would have national impact	Event would have national impact	Disruption would be focused on Auckland	Disruption would be focused on Auckland
Risk ¹⁴ probability	Not assessed.	Extremely low risk 0.15%	Extremely low risk 0.3%	Low risk 1.5%	Low risk 1.5%	Extremely low risk 0.3%
Impact on supplies	Price increase. Would be 1-2 months before supplies run short.	Immediate impact, stocks would need to be rationed to get through 6-7 week period before re-supply established	As for 2 but impact reduced as more stock available – main Auckland supply route stays open.	Impact not immediate but will need some restriction on supplies over a period of a month	Impact initially concentrated in Auckland but may spread if refinery fills with product. Distribution issue.	Immediate impact concentrated in Auckland. May spread if refinery fills with product. Distribution issue.
Oil industry response	IEA response. Can request member countries to release reserve stocks to market and/or reduce demand.	Oil industry would secure supplies from offshore but would take time – national rationing required. Some supply could be established via vessel to Wynyard wharf.	Oil industry would secure supplies from offshore but would take time – national rationing required.	Allocation of product in Wiri then look for alternate supply. Jet will be difficult.	Draw down inventories, more diesel through Wynyard. Trucking from MPT ¹⁵ & MTM	Set up Wynyard for other products. Leave ship there (would need more shipping). Trucking from MPT & MTM
Management	Government (MED) likely to coordinate response with NESO.	Government (MED) likely to coordinate response with NESO. ¹⁶	Government (MED) likely to coordinate response with NESO.	Government (MED) likely to coordinate response with NESO.	Although Auckland focused govt. still likely to be involved.	Although Auckland focused govt. still likely to be involved.
Shortage estimate (of normal demand) ¹⁷	10-15%.	National: Petrol 37% Jet 47% Diesel 38%	National: Petrol 29% Jet 40% Diesel 30%	National: Petrol 9% Jet 10% Diesel 11%	Auckland: ¹⁸ Petrol 27% Jet 61% Diesel 0%	Auckland: ⁴ Petrol 47% Jet 91% Diesel 26%

¹⁴ Risk assessments from Covec/Hale & Twomey Oil Security report for MED 2004.

¹⁵ MTM – Mt Maunganui terminal, MPT – Marsden Point road loading terminal

¹⁶ National Emergency Sharing Organisation

¹⁷ Jet shortage is before any action to shift demands to other airports (within New Zealand or offshore)

¹⁸ Actual shortage will be mitigated by customers shifting demand to other areas where possible