



REFINING NZ
Your Energy Hive

SAFETY CASE SUMMARY





CONTENTS

04	Our Refinery	06	Safety Assessments	07	Potential Major Incidents
08	Our Emergency Response Capabilities	10	What to Do in the Event of an Incident	12	Hazardous Substances
15	Further Information				

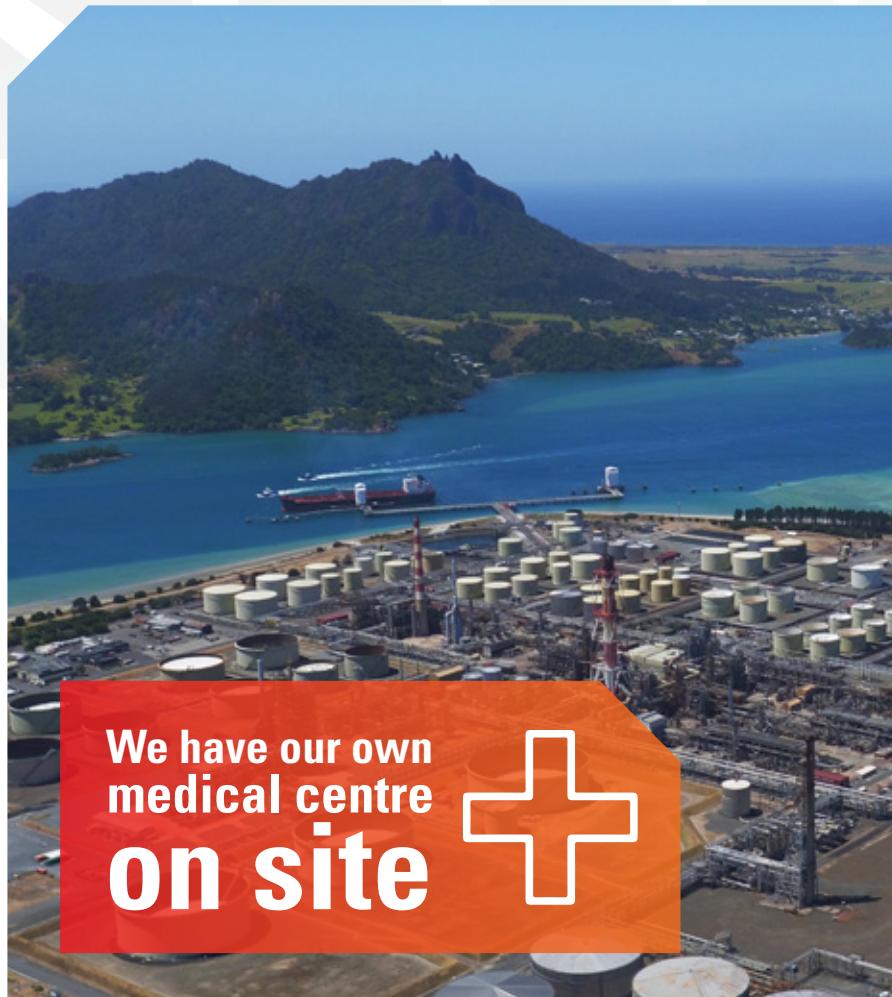
WHAT IS THE PURPOSE OF THIS SUMMARY BROCHURE?

This brochure is an easy-to-read summary about Refining NZ. In the following sections we will explain more about the refinery, a ‘Safety Case’ and ‘Major Incident Hazards’, and explain how the refinery complies with, and operates safely under, the new changes in the law.

The intent of all this is to provide better insight into how the refinery operates safely, what emergency systems we have in place and, if the worst were to happen, what this would mean to you and your family.

This Summary is available publicly at Whangarei Library, Waipu Library, Ruakaka Library, Northland Regional Council’s office and Whangarei District Council’s office. See the Further Information section of this brochure if you would like a copy.

OUR REFINERY



Refining NZ operates New Zealand's only oil refinery, located at Marsden Point. The refinery provides a significant proportion of New Zealand's fuel needs. It started producing its first fuels in the 1960s and has been a significant part of the Northland community ever since.

This is an independently-operated 'tolling' refinery. In other words, Refining NZ does not own either the oil that we refine or the fuel products that come out of the refinery. We simply charge a fee for doing the work.

BP, Mobil and Z (which also operates the Caltex brand) are all significant shareholders and customers of ours.

The refinery operates 24/7, turning raw crude oil into petrol, jet fuel, diesel, fuel oil (primarily used in ships), bitumen (for roads) and sulphur (for fertiliser).

All the crude oil we process is delivered by ships from the Far East, Middle East, Australia and New Zealand. Most of the products we make are distributed by coastal tankers or by pipeline to Auckland.

SAFE OPERATIONS

Our aim, like yours, is to see that everyone goes home safely every day. Whether this is from working at the refinery, visiting it for a quiet lunch at the café or just playing on the nearby beach.

As with everything there are risks. This is why we put huge effort into making sure that our entire workforce (including contractors) does everything safely, correctly the first time, every time.

Our refinery has been classified as a Major Hazard Facility under the new Health and Safety law. This means that we are legally obliged and accountable for working in certain ways to ensure that the processes we follow and the things we do are safe.

WHAT IS THE MAJOR HAZARD FACILITIES REGULATION?

The Major Hazard Facilities Regulation is a new regulation that came into being as part of the 2015 Health and Safety at Work Act. It sits under the Act and is overseen by a specialist group within Worksafe New Zealand. It was put in place to provide greater assurance and oversight of those manufacturing and storage facilities where certain specified hazardous substances may be present above a certain threshold.

The regulation requires a great many things one of which is a 'Safety Case'.

WHAT IS A 'SAFETY CASE'?

The 'Safety Case' is a written demonstration of our ability to operate our refinery safely, and that we have the means to control the hazards that could potentially lead to 'Major Hazard Incidents' occurring on our site.

The document itself comprises three major sections:

- **'Safety Assessment'**

How do we identify all the hazards which could result in a Major Incident?

- **'Safety Management System'**

What are the systems we use to manage the risk posed by Major Incidents?

- **'Emergency Response Management Plan'**

What do we do if the worst were to happen?

All Major Hazard Facilities are required to have a 'Safety Case' to operate and to provide this to Worksafe NZ for routine review.

In preparing our 'Safety Case' we have worked with onsite workers, specialists and external agencies such as Fire and Emergency New Zealand.



We operate

24

hours a day,

365

days a year

OUR SAFETY MANAGEMENT SYSTEM

We take the safety of our workers and the general public extremely seriously.

The number one commitment we make is that everyone who comes onto our site for any reason should go home safely every day. To help achieve this we have many systematic and structured processes in place to identify clearly all hazards and risks, and either eliminate them or minimise them as far as we can.

The effectiveness of these various systems is monitored and reported monthly to our senior management team and to our Board of Directors.

Members of our senior management team make a point of engaging regularly, on a face-to-face basis, with staff on site and elsewhere to ensure that systems are being followed and to allow workers to raise any concerns directly with leadership.

SAFETY ASSESSMENTS

We carry out process safety studies and risk assessments to identify major incident hazards in each process unit (stand-alone set of equipment) at the refinery.

These studies and assessments determine the causes and consequences of each incident and provide controls to demonstrate that we have reduced the level of risk of that incident occurring "so far as reasonably practicable".

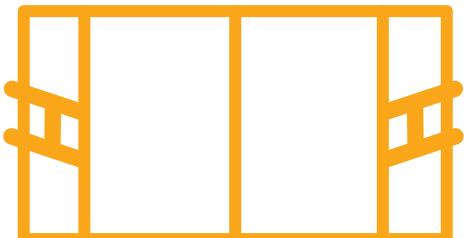


The objectives of the Safety Assessments are to demonstrate that:

- A detailed and systematic review process has been undertaken to identify and manage all Major Incident Hazards
- All causes of a Major Incident Hazard have been adequately identified
- Detailed and systematic assessment has been undertaken of the likelihood and consequences of each major incident
- For each major incident hazard, effective barriers and controls are in place to prevent the event occurring and to minimise the consequences should it do so
- Organisational processes are in place to ensure that the barriers and controls remain effective
- Risk reduction measures have been assessed and all practical measures implemented
- There is a plan to undertake any action that will improve the effectiveness of a control measure

Each Safety Assessment is conducted by a team of Operations staff and Subject Matter Experts within the refinery, along with external experts as required.

Our site is 119 hectares, the same size as
172 rugby fields





CONTROL MEASURES

Control measures are the equipment, systems and procedures that reduce the risk of a Major Incident occurring at Refining NZ, and limit the consequences if it does. All controls are reviewed, tested and maintained regularly through the refinery's Safety Management System.

Prevention controls

These are designed to stop the hazardous event occurring.

Examples include:

- control systems (alarms, trips and emergency shutdowns)
- pressure relief and flare systems
- equipment inspection and maintenance programmes
- operating procedures such as Permit to Work
- isolation valves

Recovery controls

These are in place to limit the impact of a major incident should it occur.

Examples include:

- fire and gas detection systems and alarms
- automatic and manual deluge systems
- fixed firefighting systems
- emergency response team, resources and equipment

POTENTIAL MAJOR INCIDENTS

Our Safety Assessment studies have identified the following potential Major Incidents which could occur at the refinery:

- fire due to flammable liquid release
- fire/explosion due to flammable gas release
- toxic gas release (eg; hydrogen sulphide)

Most accidental releases of hydrocarbons do not result in a fire or explosion as they are easily and quickly dealt with on site to prevent harm or environmental damage.

OFF-SITE IMPACT

Through our different process safety studies and fire/explosion computer modelling we can show that it is extremely unlikely for a Major Incident on site to have a direct impact beyond the boundary. If an incident occurs on site it may have the following consequences:

- potential visible flaring
- potential visible smoke
- potential for soot to be carried with wind

- offsite odour dependent on wind direction and strength
- potential explosion debris from butane spheres may reach the beach on our eastern boundary – resulting injuries may require medical treatment
- temporary health effects; eg, breathing difficulty, eye irritation
- potential disruption locally due to emergency services activity, road closure, beach evacuation

OUR EMERGENCY RESPONSE CAPABILITIES

We are well prepared to handle major incidents. A highly-trained, dedicated industrial fire brigade is available on site 24/7, backed up by a team of volunteers to deal with emergencies.

Regular emergency response exercises are conducted internally and with external agencies such as Fire and Emergency New Zealand (FENZ), Northland Regional Council (NRC) and Northland Civil Defence and Emergency Management (CDEM).

We have built strong relationships with these external agencies, as well as with local and national fire brigades,

Maritime NZ, NZ Defence Force, St John Ambulance and NZ Police as part of ongoing training, planning and information sharing.

We have a full range of specialist resources on site. This includes:

- communications equipment
- firewater system including hydrants, monitors, water deluges and foam equipment
- portable fire-fighting equipment
- fire-fighting response vehicles
- HAZMAT/medical response equipment

- Fire Station and Incident Control Point (emergency response co-ordination centre)
- occupational health centre with first aid/emergency treatment facilities

Also, additional resources are available from other industry partners if these are ever required.

All equipment undergoes a regular programme of inspection, testing and maintenance to applicable standards. This helps ensure it is available and effective when required.

We have
fully-equipped
emergency
services



on site
24/7





PLANNING AND PREPARATION

As the saying goes - aim for the best, plan for the worst.

We put a huge amount of work into planning and into developing emergency plans and training for both major and minor incidents:

- an Emergency Response Management Plan has been developed in consultation with experts within the refinery and with external agencies such as FENZ
- regular reviews of the emergency plans, procedures and training is carried out by a team from all parts of the business to ensure that the process is effective
- we hold regular field and multi-agency emergency exercises
- we have a training ground on site where we create controlled 'live' hydrocarbon fires for emergency services and volunteers to train on
- each and every incident that occurs on site is investigated thoroughly. The lessons we learn are built into our continued improvement process



It takes
24 hours
to unload a crude ship
(130,000 tonnes)

WHAT TO DO IN THE EVENT OF AN INCIDENT

On-site emergency

Any incident contained within the refinery boundary will be managed and responded to, in the first instance, by on-site teams with additional resources from local Fire and Emergency New Zealand brigades as required.

Information will be made available to the public on the Refining NZ Facebook page. Industrial neighbours will be notified by our incident response team by telephone. These incidents do not require any community response but we would ask that you stay away from the refinery.

Off-site emergency

In an incident where the effects might be experienced beyond our boundary you will be notified by Northland Civil Defence and Emergency Management through channels such as social media and local radio broadcasts.

The incident response team will contact vulnerable communities such as local schools with early notification.

The general advice is:

- remain indoors and close windows and doors
- search social media and local radio for information
- please do not call the refinery as we will be busy in our response efforts
- stay away from the refinery and surrounding beach
- adhere to road closures/diversions
- self-evacuate out of the area if you feel more comfortable
- seek medical attention if you feel impacted

In the extremely unlikely event that you need to evacuate your home this will be managed by NZ Police and Northland Civil Defence and Emergency Management. A Civil Defence and Emergency Management emergency mobile alert will send messages about the emergency to mobile phones capable of receiving this.

A hotline number will be established by Civil Defence and Emergency Management and details will be provided through the media.

SITE SIRENS

Our sirens are vital to ensure our staff respond safely and quickly to an incident. There are three types:

- **minor incident:** a two-tone klaxon warning of a small incident in a single part of plant
- **major incident:** a “rise and fall” tone which sounds for two minutes. This is general site-wide alarm warning of an incident which could affect one or more units
- **the ‘all clear’:** a continuous tone which sounds for one minute

The site siren is tested every Wednesday at 1300hrs using the ‘all clear’ tone.

Please note that the site sirens, which are audible off site, are sounded to alert on-site personnel only and do not require any immediate community action.



REFINERY FLARE

This operates 24/7 as a critical safety feature and in normal conditions a small pilot flame burns continuously.

Its function is to ignite any gasses which are collected from glitches in the operational process. Burning this gas prevents it being released into the atmosphere.

A major incident may result in a large or smoky flame, also known as a flare, to be present for a short period. A larger or brighter than normal flare may even last for a few days while the process is safely returned to normal. A smoky flame may also be caused for a short period when we change the fuel in our furnaces from gas to oil.

HAZARDOUS SUBSTANCES

The refinery stores or processes a variety of materials that are classified as hazardous substances.

All are processed and stored in equipment specifically designed for that material. The refinery's maintenance and operating procedures ensure that this equipment is suitable for the job it is doing.

These hazardous substances are:

Crude oil and flammable hydrocarbon products

Crude oil and refinery products such as petrol and kerosene are flammable hazardous materials. They are stored in equipment throughout the process units, sometimes at high temperature and pressure, or in specially-designed storage tanks.

Hydrogen

This is a colourless, odourless, flammable gas produced as part of the refining process and used to remove sulphur compounds from products. There is limited storage of hydrogen at the refinery - it is produced continuously in some process units and consumed in others.

Hydrogen Sulphide (H₂S)

This is a very smelly toxic gas generated during the refining process. There is no storage of H₂S in the refinery. It is converted at the refinery into elemental sulphur that is sold as a by-product.

Liquefied Petroleum Gas (LPG)

This is a generic name for colourless, odourless, flammable gasses such as butane, stored as liquids under pressure in special 'spheres'. They quickly turn to gas when exposed to the atmosphere.

Natural Gas

This is a colourless, odourless, flammable gas used mainly as fuel for the refinery furnaces. The refining process generates fuel gas streams that contain hydrocarbon gases and hydrogen. These fuel gas streams are supplemented as necessary with natural gas imported from the national distribution grid. Fuel gas and natural gas are not stored on-site but collected and burnt continuously.

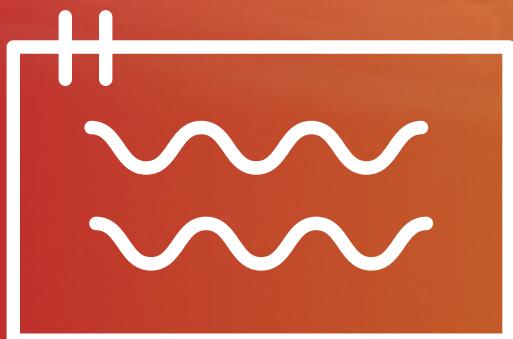


Our largest tank holds
**100 million
litres of crude**

The same amounts as

40

Olympic-sized
swimming pools

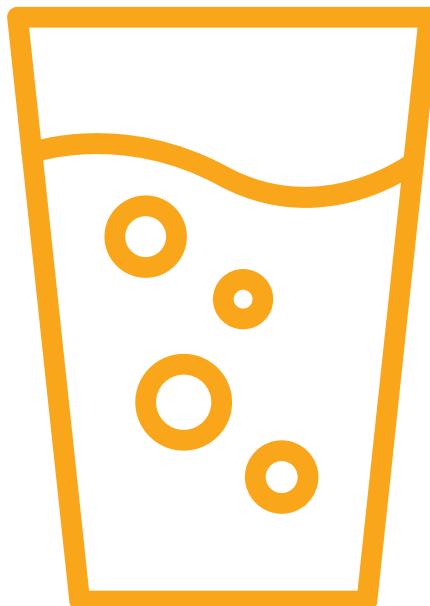




The tall red & white
chimney is
1/3rd
the height of the
Sky Tower



Some of our waste
carbon dioxide becomes the bubbles
in your soft drinks and beer



We have
300

bicycles on site
they each have their own WOF

FURTHER INFORMATION

This information brochure presents a summary of the Safety Case for the Marsden Point Oil Refinery, trading as Refining NZ. Further details, including a copy of this summary, can be obtained by contacting:

Communication and External Affairs Manager

Refining NZ
Private Bag 9024
Whangarei
0148
New Zealand

+64 9 432 8311
corporate@refiningnz.com
refiningnz.com



More information regarding the requirements for Major Hazard facilities is available from Worksafe New Zealand website:
<https://worksafe.govt.nz/topic-and-industry/major-hazard-facilities/>

More information regarding the CDEM Emergency Mobile Alerts is available from Civil Defence website:
<https://www.civildefence.govt.nz/get-ready/civil-defence-emergency-management-alerts-and-warnings/emergency-mobile-alert/>



REFINING NZ
Your Energy Hive

refiningnz.com