



He whakatairanga i ngā ahuatanga mahi mō te tunu hāngi

Food Safety
practices in preparing
and cooking a hāngi



MIHI

Korōria ki te Atua i runga rawa

He maungārongo ki te mata o te whenua

He whakaaro pai ki ngā tāngata katoa

Ngā tini mate hoki o ngā Marae

puta noa i te motu

Haere mai, haere

Haere ki te Matua nui i te Rangi

Ki te kainga tūturu anō hoki, mō tātou, mō te tangata

Rātou te hunga wairua ki a rātou

Tātou te hunga ora ki a tātou

Tihei wā mauri ora!

E ngā iwi, e ngā reo, e ngā mana

Tēnā koutou katoa

Ko ēnei tuhinga kōrero e pā ana ki ngā tikanga mō te hāngi,
ka tukua atu hei taonga mo ngā hau e whā

No reira, ma te Atua koutou, e tiaki, e manaaki

Huri noa, huri noa

Tēnā koutou, tēnā koutou, tēnā anō tātou katoa

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WHAKATAUKI

“Mā te tika o muri,
ka tika a mua”

“It is only through the efforts
of those who work out the
back, will the front flourish”

Historical Reflection He tirohanga whakamuri

Tangata whenua have always maintained traditional values of food safety and food preparation practices, which emphasised a number of effective control points, pertaining to tikanga Māori protocols.

The knowledge and history of traditional food sources, food safety and personal hygiene practices were placed and vested with ngā kaitiaki (guardians – certain people within the whānau, hapū or iwi designated to ensure the sanctity of kai was maintained) on behalf of the iwi for its survival.

Before the introduction of the Gregorian Calendar to Aotearoa/NZ, Māori had developed a system that utilised the wind, tide, moon, stars, and clouds to determine the time to gather food resources. With the ability to judge the seasons, Māori were able to gather food and shellfish in season. For example, it is said, “when the pohutukawa trees are flowering, the kina are fat”. To add to this, whenever a hui was held at a Marae, only enough kai was gathered for the purpose of that particular hui. To safeguard and to control seafood stocks from being over fished, this practice was stringently observed by Mana Whenua (local Iwi), especially when gathering kaimoana.

Also, gathering just enough food for a hui alleviated the problem of having too much leftover food. Māori from a very early age were taught only to take enough to feed one’s whānau. As different types of food would only be in season at certain periods of the year, this allowed time for food resources to replenish.

Another practice that helped to ensure seafood resources were maintained was the ritual of giving the first fish, kina, paua etc of a catch back to the sea. The significance of this ritual held spiritual connotations for Māori as well as conservation aspects. Spiritually it was a way of giving thanks to Tangaroa, the god of the sea. From a conservationist perspective, it ensured that breeding stock and gravid fish were not taken.

There were also protocols in place to monitor the control of waste from shellfish, e.g. it was prohibited to shell, prepare or eat pipi, mussel, kina, and fish in gathering areas or on the beach.

As far as human waste was concerned, all traditional food gathering areas, the sea, shellfish beds, rivers and lakes, were regarded as tapu. When a Marae was built, areas for preparing and storing food and eliminating human waste were stationed away from food gathering grounds. This reduced the possibility of contamination from human waste and refuse etc.

On reflection, Māori were very aware of how important it was that tikanga protocols on a Marae were adhered to. Personal hygiene and the sanctity of food, which encompassed these protocols, were paramount. Cleanliness was a must!

Today many of the traditions that were valued highly back then have diminished. There are many reasons for this. However, it is likely that one reason was due to many Māori moving from rural areas to the cities in the 1950s up until the 1970s to find employment. When this migration took place, they left many of their traditions behind.

With this in mind, some of the values that were prevalent in a rural setting sometimes did not apply in an urban context. This is why education on food safety practices is essential.

Raniera Bassett
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Manatū Ahu Matua

Food Safety on the Marae

Ngā tikanga e pā ana ki te kai mō te marae

Placement of Hāngi Pit

Correct placement of the hāngi pit is essential. **Refer to local Council regulations for specific local requirements.**

The pit should be:

- at least three metres away from the property boundary or any other building or structure;
- away from septic tank outflows;
- away from drains and ground water;
- away from dry foliage that could start a scrub fire.

Equipment required:

• Hāngi stones/iron bars

The volume of hāngi stones/iron bars is dependent on how many hāngi baskets will be used and this is determined by the expected number of people - (for more guidance on determining volume see also page 13).

When using river stones select them as follows:

• Selection of hāngi stones

River stones tend to explode when excessively heated. Stones that do not explode are chosen for hāngi use because they can hold extreme heat. To decide which stones to use, fire the stones as you would for a hāngi prior to use (24 hours or more so stones can cool again before being used).

Iron bars do not run the risk of explosion and also hold heat for long periods of time.

• Firewood

It is advisable to use slow burning wood e.g. mānuka. The amount of wood is dependent on how many hāngi baskets will be used and this is determined by the expected number attending. Generally, burning the wood for three hours is sufficient burning time to heat the stones/iron bars. **Never use treated timber.**

• Hāngi baskets

Line the baskets with tinfoil or cabbage leaves before food is placed in them and cover with tinfoil before cooking, so food does not come into direct contact with the soil or rocks/iron bars. Marae cooks will determine the tikanga process.

Hangi Equipment (tools)

- **Spade(s)**
- **Shovel(s)**
- **Rake(s)**
- **Axe(s)**
- **Large Plastic container(s)**
as required (to soak sacks in water)
- **Large white cloth(s)** (not bed linen) as required to cover hāngi kai
- **Sacks** to cover white cloths
- **Tarpaulin** to cover sheets and sacks (Marae tikanga will determine process)
- **Heavy duty gloves** enough for all hāngi workers to protect hands when lifting baskets out of hāngi pit (optional).
- **Long garden hose** situated near hāngi pit
- **Bucket(s)** as required for extra water.

Practical Guidelines to Preparing and Cooking a Hāngi

He mahinga arataki mō te
whakareri me te tunu hāngi

Purchasing Food Items

Te hoko i ngā kai

Purchase supplies from registered food premises or from businesses with a Ministry for Primary Industries approved programme. This will help to ensure that you are buying safe or suitable food, e.g. all meat has been properly slaughtered, inspected, processed, packaged and labelled.

When transporting perishable food such as meat and dairy products, it is recommended that these items are stored in chilly bins, or use a refrigerated vehicle if transporting perishable food in bulk.

This is to prevent the bacteria that could lead to foodborne illness from multiplying.

Harvest shellfish only from growing areas approved by your local Council. This will help ensure that the shellfish is free from harmful toxins, viruses and bacteria.



Food Storage Te whakaputu o te kai

Ensure fridges are operating at a temperature of between 0 and 5°C and the freezer temperature is set at -18°C so that food is frozen solid.



A thermometer can be purchased at a hardware store.

Keep raw meats and poultry covered in the bottom of the fridge to ensure their juices don't drip onto other food.

Keep all perishable foods covered in the fridge ready for use – this is to prevent the transfer of bacteria from raw food to ready-to-eat foods.

Keep shelf stable foods covered and away from chemicals. Rotate stock – i.e. use older food first.

Food Preparation Te taka kai

Washing and drying your hands properly is one of the most effective things you can do to prevent foodborne illness.

Ensure proper washing and drying of hands before handling food and after handling raw food – this is to prevent bacteria being transferred from unclean hands onto cooked or ready-to-eat foods.

Wash your hands – Horoia o ringaringa!

- Always wash your hands with soap and warm water for 20 seconds:
 - before you start preparing food;
 - after handling rubbish;
 - after smoking;
 - after visiting the toilet;
 - after handling raw food especially meats or poultry.
- Always dry your hands thoroughly for 20 seconds.
- A nail brush should be used to remove dirt or build up of food from under finger nails.
- Don't wear jewellery, other than a plain wedding band, on your hands during food preparation. Jewellery can provide a home for bugs that cannot be effectively cleaned during hand washing.
- People who have suffered from diarrhoea or vomiting, or have been looking after someone else, e.g. a child, with these symptoms in the last 24 hours should not prepare food for others.



Food Preparation Te taka kai



Use separate areas for preparing raw food and cooked, ready-to-eat food where possible.



Scrub bench surfaces, knives and cutting boards with hot, soapy water after use as well as between preparing raw and ready-to-eat foods (i.e. bread, salads, ham, cooked chicken). Raw foods like uncooked chicken and mince carry bugs. If these are transferred to foods that are ready-to-eat people can get sick.

Where possible, have two sets of knives and boards; one set for raw food and another for ready-to-eat food.



Clean the floors, benches and all equipment after use. If there is an extended time between using the kitchen, then cleaning before use may be necessary.

Hāngi Basket Preparation

Te whakareri i ngā rourou kōpaki mō te hāngi

Line the baskets with tinfoil or cabbage leaves before putting the raw meat and vegetables into them. (marae tikanga will determine process).

Place meat and vegetables in a single layer ready for cooking – then cover with more tinfoil.

NB Ensure all food is thoroughly defrosted before starting the cooking process.



Thaw frozen raw meat, including chicken, in the fridge and do not leave it sitting at room temperature – this is to prevent bacteria from multiplying.

Preparation of Kaimoana

Te taka kaimoana



To keep shellfish alive, keep them wet at a steady temperature of 5–7°C. Mussels will keep for four days at this temperature.

Fresh kaimoana removed from their shells will keep in a fridge for two days and in a freezer for up to three months.

Cooked kaimoana will keep in a fridge for up to two days and in a freezer for up to three months.



Always use a clean chilly bin with fresh, clean ice packs when transporting kaimoana.



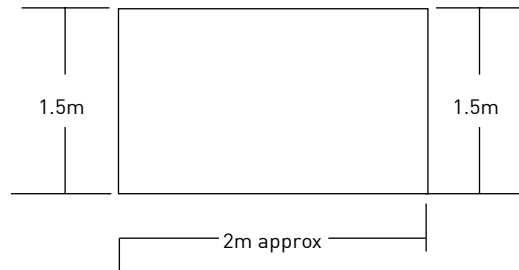
Hāngi Pit Preparation

Te whakareri i te pokorua mō te hāngi

The size of the hāngi pit will depend on the number of baskets of food that need to be cooked.

These dimensions are appropriate for 3-4 hāngi baskets (1m x 0.75m) stacked no more than two baskets high. They should be used as a guideline and scaled up to accommodate more baskets as required. Dimensions are approximate only.

Hangy Pit Preparation
Elevation via point
(Figure 1)



Cross section
(Figure 2)



Steps to be Taken Before Lighting the Hāngi

Ngā mahi i mua i te tahunga o te hāngi

STEP 1

Place dry paper and kindling in the bottom of the hāngi pit.

STEP 2

Place layers of mānuka logs on top of the dry paper and kindling. (The number of layers is dependent on the number of baskets).

STEP 3

Select enough stones or iron bars to completely cover the base of the hāngi pit and place carefully on top of the mānuka logs.



Heating of the Hāngi Stones

Te whakawera o ngā kōhatu mō te hāngi

Heat the hāngi stones for a minimum of three hours until white hot (iron bars until red hot) – this is to ensure they are hot enough to thoroughly cook the food. Thorough cooking kills any bacteria and viruses.

STEP 4

Firing of the hāngi pit.



STEP 5

Final stages of burning mānuka logs.



STEP 6

Remove red hot embers and ash from hāngi pit (this reduces the excessive smoky taste in the food).

STEP 7

Place hot embers and ash on a corrugated iron sheet and remove from the hāngi pit to a safe place. Hose the embers and ash to cool.



NB Supervise the fire at all times.

Placing of Hāngi Baskets in Hāngi Pit

Te whakanoho o ngā rourou kōpaki ki roto i te pokorua mō te hāngi

STEP 8

Carefully place the hāngi baskets on top of the hot stones, stacking no more than two baskets high and ensuring that the baskets containing meat are on the bottom layer.

STEP 9

Place the wet white cloth over the hāngi baskets.

STEP 10

Place the clean wet sacks over the wet white cloth.

NB Wet white cloths and numerous sacks create the steam required to cook the food. More water can be used if necessary. However, it should be applied sparingly as too much water can cool the stones too quickly, which can result in undercooked food.



STEP 11

Place a tarpaulin cover over the entire hāngi pit and place soil around the edges of the tarpaulin to seal in the steam.

NB Once the hāngi pit has been sealed it must be supervised throughout the cooking time (2.5-3 hours). This safety measure is to make sure that no steam escapes from the pit (escaping steam = escaping heat). If steam leakage occurs, seal with soil immediately.

Removing Hāngi Baskets after Cooking

Te tango o ngā rourou kōpaki mai i te pokorua hāngi



STEP 12

After 2.5-3 hours, carefully remove the soil from the edges of the tarpaulin.

Carefully roll the tarpaulin away from the hāngi pit.

STEP 13

Carefully remove the sacks one by one from the hāngi pit.

STEP 14

Carefully remove the large white cloths.

NB When removing the tarpaulin, sacks and cloths ensure that soil does not fall into baskets.



STEP 15

Remove the hāngi baskets from the hāngi pit and take them to the kitchen.



Serving the Food Te whakarato kai

Keep the food covered
AT ALL TIMES including right up until it is served. This prevents flies touching the food and also stops hair, dirt etc from getting into the food by accident.



Serve the food hot and as soon as possible after cooking or keep it hot in a hot holding unit (bain marie) – this prevents the small number of bugs which may have survived the cooking from growing to dangerous levels.

If using a bain marie, make sure it is preheated before placing food into it.

Food in bain maries should be maintained at a minimum temperature of 60°C.

Keep ready-to-eat foods (seafood, cold meats and salads) covered in the fridge until ready for serving. When serving cold ready-to-eat foods without cooling units or heated foods without bain maries, do not allow the food to sit at room temperature for longer than 2 hours.



Leftover Food Ngā toenga kai



It is important to cool leftover food quickly. This can be done by:

- putting the food onto open trays;
- slicing large pieces of meat;
- stirring regularly (for soups, boil ups).

It is important that chilly bins with ice packs are used when taking leftover food away – this is to prevent the bacteria multiplying.

Leftover food should be kept in the fridge and used within two days or thrown out. If reheating the food, ensure it is thoroughly reheated until it is steaming hot.

Time-temperature abuse occurs when people leave prepared food sitting at room temperature for long periods. This gives bacteria time to multiply to numbers that make people sick. Another example is failing to cool food quickly after it has been cooked, and then putting it in the fridge. Both situations encourage the growth of bacteria.

Post-cooking contamination can occur when cooked food is contaminated by using dirty hands, utensils, cutting boards, or bench surfaces.

Feeding foodwaste to pigs

The Marae kitchen will have food waste, that maybe recycled as food for pigs. While this is an environmentally friendly way of disposing of the food waste, there is a risk associated with it that will need to be managed.

If pigs are fed food waste that contains meat, or that has come into contact with meat, there is a risk that exotic diseases like foot and mouth disease can spread if they entered New Zealand.

If you supply food waste that will be fed to pigs you must either:

- exclude from the waste any meat and all items that may have **come into contact with meat**. This meat-free food waste can be fed to pigs without further treatment; or
- **treat** the food waste that **contains meat or has come into contact with meat** before supplying it to the person feeding the food waste to pigs.

Treating means heating the food waste to **100°C for one hour**. Boiling the untreated food waste for one hour will destroy any disease-causing bacteria and viruses it may contain.

Safe Drinking Water Waiora

Water used for drinking, hand washing, food preparation and cooking needs to be free from harmful bacteria and chemicals. If your water comes from a mains supply (urban Marae), your local authority monitors it to ensure it is safe.

Rural Water Supplies (Rural Marae and households)

Tank water will, at times, become contaminated with harmful bacteria from birds and other animals.

If you have a tank collecting rainwater off the roof or natural water (streams or lakes) the following are ways to keep your water safe:

- No animals upstream or by take-off point.
- Water from streams should not be used for drinking water without filtration and disinfection.
- **Include a first flush diverter** (a device that prevents the first water collected from carrying any debris into the collection tank). Place on the pipe directly from the roof if you have older tank(s).
- **Use plastic pipes.**
- **Do not have exposed tanalised timber** anywhere on the roof as chemicals can enter the water supply.
- **Keep trees from overhanging** the roof to prevent birds roosting and fouling wet surfaces.
- **Beware of lead-based paint** on the roof that can contaminate the water.
 - Check the old paint for lead through your public health service, and if you are painting the roof choose paint that the manufacturer advises is safe for roof water systems.



- **Make sure the water tank is secure** from animals, birds and other debris entering.
- **Clean the roof at least six monthly** and spouting three monthly by scrubbing with water, after disconnecting the pipe entering the tank.
- **Clean and disinfect your tank at least every 12 months.** This can be done if you need to fill up during a dry spell. Flush the tank out with water, using a broom to push sludge out through the scour valve. After cleaning and filling, disinfect the tank water by adding 33 ml of household bleach (4 percent chlorine) per 1000L. The usual tank volume is 22,500L (5000 gal) and requires 750 ml of bleach.
- **Consider installing a disinfection system** such as ultraviolet or disinfecting with chlorine on a regular basis.

Contact your local authority's Environmental Health Officer or Health Protection Officer of your local Public Health Service for advice on your water system.

Food Preparation

If there is no system for disinfecting the water, it is recommended that boiled water be used for cleaning activities, drinking, for washing fruit and vegetables, and for cooking.

Ill Food Handlers

Ngā kaimahi e māuiui ana

Gastrointestinal Infections

Vomiting or diarrhoea are important symptoms of viral or bacterial gut infection. A list of germs that frequently cause foodborne illness are shown below. A food handler who is infected can infect others through touching food. It is most important that anyone who has any symptoms be excluded from the kitchen and from handling or preparing food. If any symptoms are severe or persist, the person should see a doctor. Anyone who has suffered symptoms of vomiting or diarrhoea in the previous week and which has now settled, should tell the kitchen manager/kaiwhakahaere or the chief cook. Be extra careful, ensuring good hand hygiene by thoroughly washing and drying hands (refer to page 9).

Skin and other Infections

Food handlers with infected sores on exposed skin (hands, face, neck or scalp) can transfer bacteria to food and cause illness in those who eat it. Anyone with inflamed, weeping or discharging wounds or sores should be excluded from the kitchen until they are completely healed. Totally cover clean wounds with a brightly coloured waterproof dressing. Those with infected sores on non-exposed skin, e.g. the back or legs, can work with kai, however the kitchen manager should stress to them the importance of careful hand washing and drying. Any food handler whose eyes, ears, mouth or gums are weeping or discharging must be excluded from food handling until they are better. Those with a persisting sore throat and no other respiratory symptoms such as a runny nose or cough may have a streptococcal throat infection and should be referred to a doctor.

Common Foodborne Illness Bacteria

Ngā moroiti e pātahi ana ki te kai

When food handlers suffer from a foodborne illness it is important to follow food safety practices to prevent food poisoning. The following are examples of common food poisoning such as staying out of the kitchen while they have symptoms of vomiting or diarrhoea and not returning until they have stopped having them for about 48 hours. bacteria and how they affect people:

- *Campylobacter*

Incubation period: Usually 2 to 5 days, can be 1-10 days

Symptoms: Muscle pain, headache and fever, followed by bloody diarrhoea, abdominal pain and nausea.

- *Salmonella*

Incubation period: 12 hours to 3 days

Symptoms: Diarrhoea, abdominal cramps, vomiting, nausea and fever (lasting 1 to 7 days).

- *Staphylococcus aureus*

Incubation period: 30 mins to 7 hours

Symptoms: Usually nausea, vomiting and abdominal cramps maybe followed by diarrhoea (lasting 1 to 2 days).

- *Bacillus cereus* (Vomiting type)

Incubation period: 1 to 6 hours
Symptoms: Nausea and vomiting, sometimes followed by diarrhoea (lasting less than 1 day).

- *Bacillus cereus* (Diarrhoea type)

Incubation period: 10 to 12 hours

Symptoms: Abdominal cramps, watery diarrhoea, and sometimes nausea (lasting less than 1 day).

- *Clostridium perfringens*

Incubation period: 8 to 16 hours

Symptoms: Watery diarrhoea with severe abdominal cramps (lasting 24 hours or less).

Public Health Units

Ngā wāhanga hauora ā iwi

Northland District Health Board

PO Box 742
Whangarei 0140
Phone (09) 430 4100
After hours (09) 430 4100, 026 366 1725
Fax (09) 470 0570

Dairy House
Porowini Avenue
Whangarei 0110

After hours Eastern Bay of Plenty and Tauranga
026 111 980
Rotorua and Taupo (07) 349 3522
Fax Eastern Bay of Plenty (07) 306 0987
Tauranga (07) 578 5485
Rotorua and Taupo (07) 346 0105

Eastern Bay of Plenty Corner Garaway and Stewart
Streets
Whakatane 3120

Auckland Regional Public Health Service

Private Bag 92 605
Symonds Street
Auckland 1035
Phone (09) 623 4600
After hours (09) 623 4600
Fax (09) 630 7431

Cornwall Complex
Building 15
40 Claude Road
Greenlane
Auckland 1023

Tauranga 1st Floor
510 Cameron Road
Tauranga 3110

Rotorua and Taupo 1st Floor
1166 Amohau Street
Rotorua 3010

Tairāwhiti District Health Board

Healthy Environments
Planning, Funding and Population Health
Te Puna Waiora
Private Bag 7001
Gisborne 4040
Phone (06) 869 0570
After hours (06) 869 0500
Fax (06) 867 8414

2nd Floor, Morris Adair Building
421 Ormond Road
Gisborne 4010

Waikato District Health Board

Population Health Services
Waikato District Health Board
PO Box 505
Hamilton 3240
Phone (07) 838 2569
After hours 021 999 521
Fax (07) 838 2382

Level 4
Hugh Monckton Trust Building
Corner Rostrevor and Harwood Streets
Hamilton 3204

Hawke's Bay District Health Board

Public Health Unit
Napier Health Centre
PO Box 447
Napier 4140
Phone (06) 834 1815
After hours (06) 878 8109
Fax (06) 834 1816

76 Wellesley Road
Napier 4110

Toi Te Ora – Eastern Bay of Plenty, Tauranga, Rotorua, Taupo

Eastern Bay of Plenty PO Box 241
Whakatane 3158
Tauranga PO Box 2121
Tauranga 3140
Rotorua and Taupo PO Box 12060
Rotorua South 3045
Phone 0800 221 555

Taranaki District Health Board

Public Health Unit
Private Bag 2016
New Plymouth 4342
Phone (06) 753 7799
After hours (06) 753 7798
Fax (06) 753 7788

Barrett Building
Tukapa Street
New Plymouth 4310

MidCentral District Health Board Districts

Manawatu Public Health Unit
PO Box 2056
Palmerston North 4440
Whanganui Public Health Centre
Private Bag 3003
Whanganui 4540
Phone Manawatu (06) 350 9110
Whanganui (06) 348 1775
After hours Manawatu (06) 350 9110
Whanganui (06) 348 1234
Fax Manawatu (06) 350 9111
Whanganui (06) 348 1783

Manawatu 50 Ruahine Street
Palmerston North 4414
Whanganui Heads Road
Wanganui 4500

Regional Public Health Wellington, Hutt Valley, Wairarapa

Private Bag 31907
Lower Hutt 5040
Phone (04) 570 9002
After hours (04) 570 9007
Fax (04) 570 9211

Level 1, Community Health Building
Hutt Hospital
High Street
Lower Hutt 5010

Nelson Marlborough Public Health Service

Nelson PO Box 647
Nelson 7040
Blenheim PO Box 46
Blenheim 7240
Phone Nelson (03) 546 1537
Blenheim (03) 520 9914
After hours Nelson (03) 546 1800
Blenheim (03) 520 9999
Fax Nelson (03) 546 1542
Blenheim (03) 578 9517

Nelson 36 Franklyn Street
Nelson 7010

Blenheim Wairau Hospital
Hospital Road
Blenheim 7201

Community and Public Health Canterbury, South Canterbury, West Coast

Canterbury PO Box 1475
Christchurch 8140
South Canterbury Private Box 510
Timaru 7940
West Coast PO Box 443
Greymouth 7840
Phone Canterbury (03) 364 1777
South Canterbury (03) 687 2600
West Coast (03) 768 1160
After hours South Canterbury 027 497 5249
West Coast (03) 768 0499
Fax Canterbury (03) 379 6125
South Canterbury (03) 688 6091
West Coast (03) 768 1169

Canterbury Datacom House
76 Chester Street East
Christchurch 8011
South Canterbury 6B Sefton Street
Timaru 7910
West Coast 3 Tarapuhi Street
Greymouth 7805

Public Health South Otago, Southland

Private Bag 1921
Dunedin 9054
Phone (03) 476 9800
After hours (03) 474 0999
Fax (03) 476 9858

Main Block, Level 2
Wakari Hospital, Taieri Road
Dunedin 9016

Local Councils

There are 67 local councils throughout Aotearoa New Zealand. Contact details are available on www.lgnz.co.nz.

Ministry for Primary Industries
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Wellington 6140
NEW ZEALAND

0800 00 83 33

www.mpi.govt.nz

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New Zealand Government