Checking the plan is working well

K
Know

What do you need to know?

- It is your responsibility as the operator of the plan to regularly check that food safety and suitability is being well managed in your business.
- You or one of your staff need to be your own internal verifier. This is someone in your own business that checks that the plan is being followed correctly.

Why is self-verifying important?

- You are responsible for your business and the safety and suitability of the food you make and sell. If you wait for someone else to tell you that something has gone wrong, it may become costly and your food may make people sick.
- Check your plan is working well by (for example):
  - checking that the rules are being followed and **records** are kept where required (e.g. measuring the temperatures of food),
  - looking through **records** to check that your procedures are being followed and your systems are working as expected,
  - reviewing the rules in the ***'When something goes wrong'*** [red] card and checking that steps have been taken to prevent problems from happening again,
  - running food safety quizzes with staff,

- using the '**Show**' sections in this template to ask the same questions or check the same things that your verifier would ask or look at,
- testing the environment or foods for certain bugs or chemicals to show procedures (e.g. cleaning and sanitising) are effective.

Some notes about testing:

- There are specific requirements for testing in some situations (e.g. self-supply water).
- There are rules about certain limits for bugs or chemicals in the Australia New Zealand Food Standards Code (the Code) www.foodstandards.govt.nz/code/Pages/default.aspx. A limit does not mean you always have to test the food for that bug or chemical.
- If you are thinking about using sampling and testing to show your plan is working well, this should not be the only check that you do. It is not possible to test your way to food safety. Testing can be used to support and confirm the other checks being regularly made. It is not a substitute for them, and you cannot rely on testing your way to food safety. Carrying out tests of the food environment can help, for example:
  - If testing results find harmful bugs, it might mean some part of your process is not working well and you will need to follow the ***'When something goes wrong'*** [red] card. A negative result may not prove that your plan is working perfectly or that the food is safe. Bugs, are not usually evenly distributed in food so it is possible to test some food and get a negative result, when another part of the food in the same batch has high levels of harmful bugs.

K
Know

- If you use sampling and testing as part of your procedure for checking, it is highly recommended that the testing plan is developed by an expert. If you do not have an expert in your business, your verifier or a consultant can provide information about putting together a sampling and testing plan.

D
Do

What do you need to do?

- You must set up procedures for regularly checking that you and your staff are making safe and suitable food and meeting your requirements and responsibilities under the Food Act 2014.
- You must ensure:
  - that staff and people (e.g. delivery staff, suppliers) that come in contact with food understand and can follow the rules in the **Do** sections of the Plan and are following them,
  - the procedures you have put in place are being followed and are effective,
  - your facilities and equipment remain suitable for the food activities at your business,
  - that staff have the equipment and information to help them handle food safely,
  - staff are committed to food safety. Staff who feel valued and committed to food safety are much more likely to practice good food safety,
  - your scope of operations is up to date with your current business activities (for example, if you are now selling frozen/chilled ready-to-eat meals, ~~or making biltong~~, then this plan is no longer suitable for you and you must contact your registration authority).

- Follow the procedure on ***'When something goes wrong'*** [red card] if your if your sef-verification identifies mistakes or actions that could have made food unsafe or unsuitable.

What do you need to show?

- Show your verifier:
  - how you check that your procedures are working well,
  - **records** showing the results of the checks you have made when self-verifying.

Managing self-supply water

What do you need to know?

- If you are using self-supplied water then you will need to ensure that it is safe.
- Water can carry harmful bugs and chemicals which can make people sick. You need to only use safe water for food preparation.
- 'Safe water' is water that will not make people sick or kill them.
- Water can be contaminated when being stored on-site and being distributed around food premises.
- You need to know what contaminants (e.g. dirt, stones, chemicals etc.) may be in your water and what treatment will be needed to ensure that it is safe.
- You need to have enough safe water available to ensure your food preparation areas, utensils and equipment can be cleaned, and staff can wash their hands when needed.
- You will need to know what nearby activities and naturally occurring chemicals (e.g. nitrates for groundwater, or lead for roof water) could make your water supply unsafe.
- Any water treatment equipment used will need to be maintained, see the ***'Maintaining equipment and facilities'*** [purple] card.
- There is information on the MPI website about accredited labs.

What do you need to do?

- Tick where you get your water from:
  - ☐ roof water source
  - ☐ surface water source
  - ☐ ground water source
- Always use safe water for food preparation, cleaning and washing hands. If your water supply becomes unsafe you must:
  - not use it, or
  - boil it for at least 1 minute before use, or
  - disinfect it with chlorine before use, or
  - use another source of water which you know is safe (e.g. bottled water).
- Always throw out any food which has become contaminated by unsafe water.
- Always clean and sanitise any food contact surfaces that have been contaminated by unsafe water.
- A water treatment system is only required when the operator's self-supplied water does not naturally meet the testing requirements in the table. Tick what you use:
  - ☐ Filtration
  - ☐ Chlorination
  - ☐ UV disinfection
  - ☐ Other _____
- You or your staff must test your water:
  - before first use in your business, or
  - if you do not have any records of self-supplied water testing.

- Your water must meet all of the limits in the table below:

Measurement	Criteria
Escherichia coli	Less than 1 in any 100 ml sample**
Turbidity	Must not exceed 5 Nephelometric Turbidity Units
Chlorine (when chlorinated)	Not less than 0.2mg/l (ppm) free available chlorine with a minimum of 30 minutes contact time
pH (when chlorinated)	6.5 – 8.0

***Escherichia coli testing must be performed by an accredited lab.*

- You must retest water no later than 1 week after:
  - getting water from a new self-supplied source, or
  - knowing of a change to the environment or activities that may affect the safety and suitability of water (e.g. an adverse event, such as flooding or an earthquake).
- You must maintain equipment that is used for water supply, see the ***'Maintaining equipment and facilities'*** [purple] card.
- You must clearly mark taps, tanks, and pipes that do not contain safe water. These must not be used for food processing, hand washing and cleaning.
- For surface water sources, and ground water sources, water intakes must be:
  - at least 10m away from livestock,
  - at least 50m away from potential sources of contamination including silage stacks, offal pits, human and animal waste, potential chemical stores and tanks (e.g. fuel tank).

- You must identify any nearby activities and chemical hazards (including naturally occurring) that could make your water supply unsafe, and control these appropriately.

What do you need to show?

- Show your verifier a **record** of:
  - your water test results,
  - a list of all nearby activities which might affect the safety of your water.
- Show your verifier how you know your water treatment system is working properly.
- Show your verifier any chemical hazards you have identified and how you control these.

Sourcing, receiving and storing food

K
Know

What do you need to know?

- You need to know that the food you receive from a supplier or other source, is safe and suitable.
- You also need to know where the food has come from in case something goes wrong.
- Some foods need to be kept cold (chilled or frozen) to stop bugs growing.
- If you are receiving live shellfish then there are certain rules you need to follow when receiving it, these are outlined in the **Do** section.
- If storing hot or cold food in vending machines, keep food at the correct temperature to stop bugs from growing.
- Food or ingredients should not be used or sold after their 'Use-By' date (this includes food from vending machines). Guidance on the use of 'Use-By' or 'Best Before' date marks can be found here: www.mpi.govt.nz/food-safety-home/how-read-food-labels/
- If you import food you will need to either register as a food importer with MPI, or only purchase imported food from a registered food importer.
- If you are a registered importer, then the food you import will need a safety and suitability assessment before being imported, see www.mpi.govt.nz/import/food/advice-for-food-importers/responsibilities-of-a-registered-food-

K
Know

importer/food-importers-must-assess-and-confirm-safety-and-suitability-of-imported-food/ for more information.

Why is sourcing and receiving important?

- Using trusted suppliers gives you confidence that the foods, and ingredients you use are safe and suitable. This can prevent people getting sick from your food, and save you time and money.
- Trusted suppliers could be businesses registered under the Food Act or Animal Products Act. MPI have a register where you can look suppliers up: www.mpi.govt.nz/food-business/food-safety-registers-lists/
- It is best to be at your business to receive deliveries. If chilled or frozen food is delivered out of hours, you will need to know that it was delivered at the right temperature, put away in the right place (e.g. fridge or freezer) as agreed with your supplier, and that it is still safe to use.

D
Do

What do you need to do?

- Only source food from trusted suppliers.
- If you are importing food, you must register as a food importer with MPI, or contract the services of one.
- You must conduct a safety and suitability assessment of food before you import it. See the Know section for more information.
- When collecting or receiving food, you must check that:
  - cold food is cold,
  - frozen food is frozen,

- packaging is not damaged or dirty,
- food is not past its Use-By date.

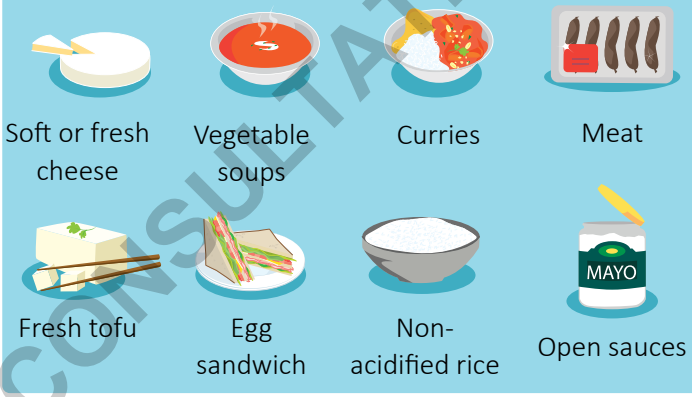
- If you are transporting food after collecting it, then you will need to follow the ***'Transporting food'*** [orange] card.

- When receiving live shellfish, you must:
  - ensure it has been chilled to a temperature of 10ºC or less,
  - check that it does not contain foreign matter (e.g. mud and stones),
  - check with your supplier if it is safe to be consumed raw or lightly cooked,
  - receive a harvest declaration if you receive the shellfish direct from the harvester.
- When receiving food, record:
  - the name and contact details of your supplier,
  - the type and quantity of food,
  - the temperature of the food, if it needs to be kept at a certain temperature to make sure it is safe and suitable.
- When receiving food check that it has sufficient information on the label so that you can accurately use or label your food. Ask your supplier for information about unlabelled products or for translations if imported.
- Follow manufacturer's instructions for storing food.
- Store food safely. Put chilled food away first, then frozen food, then food that can be stored at room temperature.
- Arrange your supplies so food with the soonest Use-By or Best Before dates is used first.
- Throw out food at its Use-By date.

- Follow the 2 hour/4-hour rule, as shown in the diagram below:

Total time food is in the danger zone (5°C to 60°C)	What to do
More than 4 hours	Throw out
2 to 4 hours	Serve, or heat to 75°C Do not chill
0 to 2 hours	Serve, or chill, or heat to 75°C

Applies to foods, such as:



- The danger zone is between 5°C to 60°C and this is when harmful bugs grow quickly.
- Store food covered and clearly labelled.
- If something goes wrong during the sourcing or receiving of food, follow the ***'When something goes wrong'*** [red] card.

What do you need to show?

- Your verifier will check:
  - how you and your staff know that the food you receive is safe and suitable,
  - records of your trusted supplier list and supplier assurances,
  - records of:
    - the name of your supplier,
    - the type and quantity of food,
    - the temperature of the food, if it needs to be kept at a certain temperature to make sure it is safe and suitable.
- Show your verifier how you and your staff store, label, and separate food following your plan.
- Show your verifier your food importer registration certificate.
- Show your verifier the safety and suitability assessment of food you have imported.

Using water activity to control bugs

K
Know

What do you need to know?

- This procedure applies to people who concentrate and dry food.
- Examples of food that can be dried using this card are: cooked and dried meat products, dried fruits and vegetables (e.g. dried lemons, limes, oranges).
- If you are making biltong, please refer to the ***'Making biltong'*** [teal] card. Do not use this card.
- Harmful bugs need moisture to grow. Lowering the moisture content (water activity) of your food will help to stop their growth.
- Water activity relates to the amount of water that is available, to support the growth of bugs, in your food. It is not the same as the overall moisture content of a food as some moisture in food is not available for bugs to use for growth.
- To lower water activity you need to reduce the moisture content to make it harder for bugs to grow. This can be done by drying food, or adding salt or sugar.
- A water activity of 0.85 or less is necessary if food is not intended to be stored in the fridge, or have another preservation method (e.g. pH).
- ~~Biltong cannot be made and sold under this plan. Contact MPI (foodactinfo@mpi.govt.nz) for further help.~~
- Lowering the moisture content of food can also have the effect of raising the salt or sugar concentration in foods- which can kill many bugs.

K
Know

- It is important that the method you and your staff use for concentration or drying results in water being removed evenly from the food. If there are some spots with a higher water activity, bugs can still grow in these parts and cause the food to become unsafe or unsuitable.
- Once the water activity of your food is below 0.85, it is important to protect it from absorbing water from the air, or other foods during its shelf-life. This can be done by:
  - using packaging that prevents moisture absorption, or
  - storing the food in a humidity controlled environment.
- If the water activity increases again, any bugs that are still alive can start growing again, and cause the food to become unsafe or unsuitable.
- There are rules in the Australia New Zealand Food Standards Code (the Code) about the types of food additives (e.g. preservatives) you can add to some foods. See the Code or ask your verifier for more information.
- You and your staff do not need to follow this card if you are following the ***'Making Chinese-style roast duck'*** [teal] card.

D
Do

What do you need to do?

Drying

- Dried products must have a water activity of 0.85 or less unless they are either: (tick if one applies)

  ☐ stored chilled at 5°C or below until it is used,

  ☐ subject to other valid preservation methods (e.g. reducing pH).

- All drying equipment (e.g. heating, fans, humidifiers) must be regularly checked that they are working properly.
- I will dry my food: (tick where food is dried)
  - ☐ in a temperature-controlled space,
  - ☐ at ambient air temperatures.
- If you are drying food in the danger zone (5°C to 60°C) that usually requires temperature control, then you must follow the 2 hour/4 hour rule. See the ***'Preparing food safely'*** [green] card.
- If you are making products with a water activity of 0.85 or less, you must test them to make sure they achieve this.
- If you and your staff have a proven method for drying your food to a water activity of 0.85 or less, you must send 3 batches of your product to an accredited lab for water activity testing. This must be done at least once initially, and then you can use your own method to calculate water activity (e.g. weight loss). See the ***'Proving the method you use works every time'*** [magenta] card.

Brining and salting

- During immersion brining, meat must be fully immersed in the brine.
- Empty and clean brining tanks regularly (e.g. at the end of each batch).
- Check injection equipment before and after each use for any broken or missing parts.
- Injectors must be clean before use.

D
Do

- When salting, or rubbing salt, make sure the salt evenly covers the surface of the food.

Brining and salting solutions

- Only use permitted food additives. See the rules in the Code for the list of food additives you can use.
- Make and use preparations following the manufacturer's instructions, or with own tried and tested recipes.
- Do not dilute the concentration of food additives (e.g. nitrite) and salt necessary to achieve brining and salting.
- Stored chilled preparations at 5°C or below. Keep them covered until use.
- Carry out brining and salting at 5°C or below.
- Throw out any recirculated or re-used preparations, and preparations which may been contaminated such as those used in injecting, at the end of each batch or day's operation.

S
Show

What do you need to show?

- Show your verifier:
  - any laboratory test results or results from your own method (e.g. weight loss) for water activity testing (if applicable),
  - how you and your staff safely dry or brine your food,
  - a **record** of the permitted food additives and how you are meeting the rules in the Code.

Using acid to control bugs

What do you need to know?

- If you and your staff ferment or acidify your food to make it safe, there are pH rules you need to meet.
- Acidification is when acid is added to food to stop or slow down the growth of harmful bugs (e.g. pickling onions).
- Fermentation is when good bugs are purposefully grown in food to compete against harmful bugs and slow them down.
- Examples of food that can be made using this card are: pickled vegetables, fruit and meat; kombucha; kimchi; saurkraut; sauces etc;
- Many harmful bugs cannot grow or grow very slowly in acidic environments (pH of 4.6 or less). Lowering the pH to less than 3.6 kills most harmful bugs.
- You and your staff do not need to follow this card if you are following either of these cards:
  - ***Making Chinese-style roast duck*** [teal card], or
  - ***Making sushi*** [teal card].
- You need to get the pH levels of your food right so you do not harm your customers i.e. if the food is too acidic (pH less than 3.0) you could burn someone's throat. If the food is not acidic enough (pH more than 4.6) too many bad bugs can grow.
- It is important that the method you use to acidify food results in an even pH, throughout the food, to prevent bugs growing.

K
Know

- You might need to calculate the shelf-life of your acidified or fermented product, follow the rules in the the ***'Packaging and labelling your food'*** [orange] card.
- You cannot make uncooked comminuted fermented meat (UCFM) products (e.g. uncooked salami or chorizo) with this plan. You will need to register a custom Food Control Plan, if you want to make these products. For more information, see here: www.mpi.govt.nz/food-business/running-a-food-business/food-control-plans/custom-food-control-plans/create-custom-food-control-plan/
- If you wish to sell acidified or fermented products to other businesses (e.g. sauces, kombucha etc), you will need to follow the rules in the ***'Selling food to other businesses'*** [orange] card.

D
Do

What do you need to do?

- Identify the foods that need to be fermented or acidified.
- If you and your staff are acidifying food, other than to provide flavour, you must use a method that achieves a consistent pH.
- If you and your staff are fermenting food, you must use a method that allows the good bugs to grow quickly, well and evenly throughout your food.
- Use one of these methods to measure pH: (tick which you and your staff will do)
  - ☐ use a calibrated pH meter or
  - ☐ send samples to an accredited lab.

D
Do

- The finished food product must have:
  a. a pH throughout that must have stabilised at 3.6 or less, or
  b. both:
     i. a pH throughout that must have stabilised at between 3.6 and 4.6, and
     ii. the product must have been subject to a pasteurisation process, or a thorough cooking process.
- If you want to sell acidified or fermented products to other businesses, then you must follow the rules in the ***'Selling food to other businesses'*** [orange] card.
- If you and your staff regularly acidify or ferment your products, you can prove your method so that you only need to check batches at a determined frequency. See the ***'Proving the method you use works every time'*** [magenta] card.

S
Show

What do you need to show?

- Show your verifier:
  - how you and your staff ferment or acidify your food,
  - how you and your staff know the pH is uniform and stable and is either:
    - below 3.6, or
    - between 3.6 and 4.6 if the finished food has been pasteurised or thoroughly cooked.
  - if you and your staff are fermenting, how you know the fermentation is working.

Hot-smoking to control bugs

K
Know

What do you need to know?

- You can hot smoke your food to either cook it or add flavour to it. Depending on what you are doing will determine what rules you need to follow in the **Do** section of this card.
- There are rules in the Australia New Zealand Food Standards Code (the Code) about the types of food additives (e.g. preservatives) you can add to some foods. See the Code or ask your verifier for more information.

Why is hot smoking to control bugs important?

- Hot smoking can help to stop bugs growing in your food but it may need further processing or cold storage to make sure it is safe.

D
Do

What do you need to do?

- Choose why you are hot-smoking:
  - ☐ hot-smoking to cook food,
  - ☐ hot-smoking to impart flavour.

Smoking seafood

- When hot-smoking seafood you must only use fresh seafood, or seafood that was frozen when it was fresh.
- If hot-smoking is part of the cooking process for seafood products, it must be cooked using one of the following time temperature combinations:

Internal temp	Mussels	Salmon/ oily fish	Hoki/lean fish	Other (e.g. shellfish, crustacea)
63°C	6 min	8.5 min	4.25 min	13 min
65°C	2.25 min	4.5 min	2.25 min	6 min
68°C	30 sec	2 min	1 min	2 min
70°C	5 sec	35 sec	10 sec	1.5 min
75°C	1 sec	5 sec	2 sec	15 sec

Smoking meat

- If hot-smoking is part of the cooking process for meat products, it must be cooked to a temperature of 75°C for at least 30 seconds. Or an equivalent time temperature combination from the ***'Cooking poultry, minced meat and chicken liver'*** [magenta] card.
- All smoking equipment (e.g. heating, air circulation, wood chips) must be safe and working properly.
- Smoking must be carried out: (tick which one you and your staff will do)
  - ☐ in a temperature-controlled space,
  - ☐ with the smoking temperature manually controlled.
- The product must be spaced out evenly to help air circulation and even smoking of your product.
- Follow manufacturer's instructions when using liquid smoke.
- After your food has been smoked, food which must be kept cold must be stored at or below 5°C and must either be (tick which you will do):

D
Do

- ☐ marked with the date and time it was smoked, and then either used, or sold to be consumed, within 5 days of processing, or
- ☐ given a 'Use-By' date.

- For more information on date marking, follow the rules in the the ***'Packaging and labeling your food'*** [orange] card.
- For each batch of food you hot-smoke as part of the cooking process, you must keep records, follow the rules in the the **Show** section.
- For each batch of food you hot-smoke to flavour, you must keep records, follow the rules in the the **Show** section.
- If you and your staff are smoking for flavour, then you must follow the 2 hour/4 hour rule. Follow the rules in the the ***'Preparing food safely'*** [green] card.
- If you and your staff are cooling the hot smoked food, then you must follow the requirements on the ***'Cooling freshly cooked food'*** [magenta] card.
- If you and your staff regularly hot-smoke your products, you can prove your method so that you only need to check batches weekly. See the ***'Proving the method you use works every time'*** [magenta] card.

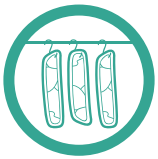
S
Show

What do you need to show?

- Show your verifier:
  - how you and your staff safely hot smoke your food.
  - If hot-smoking is part of the cooking process, how you know your food is cooked, and a written **record** of:
    - the smoke house/box air temperature,
    - the smoking start time,

- the smoking finish time,
- the core temperature of the food at the end of the cooking period,
- if additional time for cooking was required.

- If hot-smoking to flavour your food, a written **record** of:
  - the smoke house/box air temperature,
  - the length of time of the smoking process.



Making biltong

What do you need to know?

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- If you make other ready-to-eat dried meat products, such as droëwors, that won't be cooked, there will be processing steps that are not covered by this card. You will need a 'custom' food control plan for these products www.mpi.govt.nz/food-business/running-a-food-business/food-control-plans/custom-food-control-plans/create-custom-food-control-plan.
- You can only use this card if you are making biltong from **Red Meat** (beef, lamb and venison).
- Meat must have originated from a registered premises operating under a Risk Management Programme, and subject to national microbial monitoring. This excludes micro abattoirs (who are not subject to national microbial monitoring). Registered premises can be found here: Register of Risk Management Programmes mpi.my.site.com/publicregister/s/RiskMeasureSearch?riskMeasureType=Risk%20Management%20Programme.

QR code placeholder

- Scraps and trimmings left over from other processes in your business may be contaminated and are not suitable for making biltong using this card.
- Biltong needs to be dried to a level of water activity (a_w) of less than 0.85. This helps to ensure harmful bugs won't grow or produce toxins in the dried biltong.

- Because biltong isn't cooked, it is particularly important to make sure your processing environment and equipment is clean and you are washing your hands as required.
- Your process needs to operate hygienically and consider factors that may affect the rate of drying including:
    - **thickness of the slices** – the thicker the slices, the longer the centre of the meat will take to dry.
    - **hanging and arranging slices** – making sure slices don't touch each other helps ensure even drying through the slice. Where slices touch, bugs can grow.
    - **air movement across meat surfaces** – the faster the air speed, the quicker moisture is removed from the surface of the meat.
    - **humidity** – increasing the air humidity can help balance the rate of surface moisture-loss where air movement is high.
    - **surface fat** – can act as a water barrier slowing the rate at which the meat under it dries.
    - differences in **seasonal temperatures and conditions** – you should consider the environmental conditions you are making biltong in. Seasonal temperatures differ between countries and regions. You may choose to make biltong at dryer times of the year, or you might want to control drying conditions using different equipment and/or settings.
- You need to know food additives you use in your biltong are permitted under the Code. Follow the rules in the ***'Knowing what is in your food'*** [orange] card for more information.

D

Do

What do you need to do?

- You must carry out checks each time you make biltong and record the results to show how you know a batch of biltong has dried to below a_w 0.85.
- You can check the water activity of each batch of biltong using one of the three methods below. Tick which one you will use below:

  ☐ send biltong samples to a laboratory to test for a_w, or

  ☐ use a water activity meter (used according to manufacturers' instructions), or

  ☐ use percentage (%) weight loss to calculate water activity. If you choose this option you must use this procedure: [URL tbc]

QR code placeholder

- Information in this card marked with the **pencil icon** identifies:
  - the checks you must do at each step in the process; and
  - the information you will need to provide (refer to the record blank here: URL tbc).
- The record blank [URL here] is a way to show how your biltong meets the requirements of your plan. You don't have to use this specific record blank, but you must keep records of the information indicated in this card.

Sourcing

- You must follow the ***'Sourcing, receiving and storing your food'*** [green] card and ***'Tracing your food'*** [red] card. You must also only use:

- meat from a registered NZ meat processor (Register of Risk Management Programmes), other than a micro-abattoir.
- fresh hindquarter meat, or hindquarter meat that was frozen when fresh.
- herbs, spices and other ingredients that have been hygienically produced.
- meat kept chilled below 5°C until it is used.

- **Record** confirmation from your meat supplier that meat ordered for making biltong comes from an authorised abattoir in New Zealand with Establishment Number(s) on the box or carcase.

Preparing

- Slice meat to the same, or very similar, thickness. You may use tempered meat (thawing meat that is still partially frozen) for slicing.
- As well as following requirements in your plan for ***'Knowing what is in your food'*** [orange] card, you must prepare the marinade and accurately measure ingredients so that:
  - salt and vinegar are present in the minimum quantities per kg of meat as identified in the following table, including when you use a commercial biltong pre-mix.
  - biltong must only contain food additives that are allowed by the Code, in a quantity permitted to be in the finished food product.
- Ensure all meat surfaces are covered with the marinade, then marinate at of below 5°C for at least 10 hours.

Ingredient	Quantity per kg of meat
Meat	1 kg
Vinegar	Minimum weight 30 grams
Salt	Minimum weight 30 grams
Potassium Nitrite (249)	Maximum Level (mg/kg) 50 (From Food Standards Code)

- **Record** this:
  - the weight of meat used in the batch.
  - the amount of salt and vinegar (calculated using the total weight of meat).
  - your calculation for ensuring the levels of sodium or potassium nitrite added (or any other permitted food additive) does not exceed levels permitted in the dried biltong.
  - Note: If you use the same weight of meat, amounts of salt, vinegar, and permitted additives each time, you do not need to write them down each time.
  - Note: The following **record** only applies to operators using the % weight loss method.
  - The weight and thickness of a representative sample (10 or more) of raw meat slices from each batch of biltong. Number each slice before starting the drying process.

Drying, Storing and Handling

- Dry meat slices in a dedicated space such as a drying room or cabinet ensuring they are protected from contamination.

- Hang marinated slices of meat using clean and sanitised hooks.
- Hang slices in the drying space so they don't touch other pieces of meat, walls, or equipment; and so air can circulate around each slice during drying.
- Make sure that equipment used in the dedicated drying space:
  - is operated to dry meat evenly to prevent 'case hardening' (crusty outer, wet centre).
  - is monitored throughout the drying time to ensure it operates as you intend it to for drying the meat.
  - does not contaminate meat while drying.
  - is thoroughly cleaned between batches (for example, from meat 'drip').
- At the end of the drying process biltong must have a water activity of below a_w 0.85. Check water activity using your chosen method.
- **Record** this:
  - the air temperature for drying and any other settings of equipment you use that are necessary for the process (i.e. settings you rely on each time you make biltong).
  - the date and time the batch of marinated meat was hung in the dryer.
  - the date and time the batch of biltong finished drying.
- If results from checking a_w show the biltong is not below a_w 0.85, you:
  - must dry the biltong for longer and retest until the batch is below a_w 0.85.

D
Do

- must write down the actions you took with the batch of biltong until you confirmed the a_w was below a_w 0.85 (for example, using the 'Biltong batch record').
- will need to review your drying process to find out why the a_w of biltong did not lower to less than a_w 0.85. Then you will need to adjust your process so it works as intended.

- **You must not sell biltong unless the a_w is below 0.85.**
- You must store and handle dried biltong hygienically under conditions that keep the water activity below a_w 0.85 throughout its shelf-life.

Establishing shelf-life

- To provide accurate information to consumers about how long biltong will be safe to eat once it has finished drying you will need to determine its **shelf-life.** Follow the rules in the ***'Packaging and labelling your food'*** [orange] card to determine this.

S
Show

What do you need to show?

- You will need to show or describe to your verifier how you:
  - know every batch is safe and suitable with an a_w below 0.85.
  - ensure the process is hygienic and works as intended each time.
  - confirm meat is from NZ and from a registered premises.
  - how meat is sliced to an even thickness.

- ensure the vinegar and salt to meat ratio is at least the minimum amount required.
- thoroughly marinate meat slices before starting the drying process.
- know your drying process will consistently dry each batch of biltong.
- store and display biltong to ensure it won't absorb moisture.
- know product shelf-life is accurate.

Additional information to support the 'Making Biltong' card

Procedure for setting up the % weight loss method.

QR code placeholder

Use this form (URL tbc for: setting up % weight loss record blank) to **record** details when using this procedure.

If you use this procedure you will need to re-validate it every year and send samples to a laboratory for a_w testing. You will also need to do this whenever you change your recipe.

To use this method you must establish a relationship between a_w and the % weight loss of your biltong at the end of drying.

Measure the % weight loss of several biltong pieces during drying, and at the end of drying send samples to a laboratory to test the a_w.

You can then compare the a_w results for each slice with the % weight loss you have calculated during drying.

Knowing the % weight loss at which your biltong will have an a_w below 0.85 will enable you to assess the a_w of future batches without having to send them for testing at a laboratory.

1. Select 15 slices of fresh-cut meat to be used for making biltong- the more slices you select, the better the information you will gather. You must include the thickest slices in the batch.
2. Hygienically weigh each slice, attach a numbered label to it.
3. Measure the thickness of each slice.
4. **Record** the thickness of each slice and its weight against the corresponding number in the relevant column.

5. Marinate and dry the biltong following your procedure.
6. Reweigh each slice at the end of drying.
7. **Record** the dried weight of each biltong against the corresponding number in the 'biltong weight after drying' column. Calculate each biltong's weight loss:
   Weight loss = weight when sliced – weight when dried.
8. Calculate % weight loss: % weight loss = weight loss divided by weight when sliced X 100.
9. Send samples from 5 slices with the **lowest percentage weight loss** ('worst case' slices) to the laboratory for testing for water activity.
10. **Record** the results of the laboratory a_w test next to the corresponding biltong number.
11. If the results from the laboratory show the a_w for samples with the lowest percentage weight loss (the 'worst cases') are below 0.85, you may assume slices of a similar thickness (or less thick), and that have an equal (or greater) percentage weight loss will also be below a_w 0.85.
12. When you use the same process to make the next batch of biltong you can assess the % weight loss of 'worst cases' from the new batch against the a_w results from **setting up the % weight loss method.**

If any results from the laboratory, or a % weight loss assessment, indicate the product does not have an a_w below 0.85, it will need drying for longer and the a_w rechecked until it does.

Procedure for using % weight loss to calculate water activity

This can be used once you have set up for the % weight loss method using the procedure here: URL tbc

QR code placeholder

QR code placeholder

Use this form (URL tbc 'Recording each batch of biltong' record blank) to record details when using this procedure.

1. Weigh each of the 10 dried, numbered slices. **Record** against the 'percentage weight loss/a_w calculated for this batch' section in the form the dried weight of each slice.
2. Calculate the % weight lost during drying for each of the numbered slices:
    - Weight loss = weight when sliced – weight when dried,
    - **Record** this in the weight loss column in the form next to the corresponding biltong number.
3. Calculate the % weight loss for each numbered slice in the current batch:
    - Weight loss is divided by the weight when sliced x 100.
    - **Record** this number in the % weight loss column in the form next to the corresponding slice number.
4. Compare the % weight loss of each numbered slice with the results from the 'Setting up the % weight loss method' laboratory testing. The comparison must be with a slice with a similar raw meat thickness and weight.
5. Where the % weight loss of a numbered slice is the **same, or greater than**, the % weight loss of a similar-sized laboratory tested biltong with aw below 0.85, record a tick (✓) against the 'Meets a_w below 0.85 from the setting up the method lab results' column in the form.

6. Where the % weight loss of a numbered slice is **less than** the % weight loss of a similar-sized laboratory tested biltong with aw below 0.85, **record** a cross (X) against the 'Meets a_w below 0.85 from the setting up the method lab results' column in the form.
7. If 1 or more, of the numbered slices has a cross (X) recorded in the form, **all** the slices in the batch will need to be dried for longer until the % weight loss of **all** numbered slices is the same, or greater than, a similar-sized laboratory tested slice with an a_w below 0.85.