



Guidelines for Issuing Permissions for the Use of Vertebrate Toxic Agents

Revised 2022

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Preface

Vertebrate pest control is an important part of efforts to protect New Zealand's native flora and fauna, to prevent the spread of diseases and to reduce the impact of pest damage to crops and pasture. Compared with other countries, New Zealand uses large amounts of vertebrate toxic agents (VTAs), in particular, sodium fluoroacetate (1080), to control animal pests. The magnitude of the animal pest problem in New Zealand, and the nature and size of the terrain involved, mean that targeted pest management such as hunting or non-toxic trapping methods cannot adequately control pest numbers in defined areas nor prevent the spread of those pests. In the absence of other suitable control methods, VTAs are the first line of management of pest populations.

Methods for VTA use have improved over the last few decades. For example, global positioning systems (GPS) are now used to enable more targeted aerial applications, and the types and application of bait have improved.

The specific characteristics and risk profile of each VTA or other hazardous substance operation are different, depending on which VTA or other hazardous substance is used. The Environmental Protection Authority undertakes a risk assessment of all hazardous substances, and sets controls to manage risks, including public health risks.

In order to use certain VTAs and other hazardous substances, operators must apply for permission, and they have a legal obligation to comply with any conditions in the permission. These guidelines provide practical advice on setting conditions in permissions to use VTAs and other hazardous substances, using a public health risk assessment framework. These guidelines are only relevant to permissions issued where there is a public health risk, and do not apply to permissions that are issued by the Department of Conservation.

This 2022 revised edition includes the following changes:

- generally updating and simplifying text, including removing duplication and re-ordering content to give a more logical flow of information
- refocusing the guidelines on managing public health risks by preventing unnecessary public exposures to VTAs and other hazardous substances
- updating the Model Permit Conditions to reflect this public health risk management approach.

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Introduction

Permissions are required for the use of certain vertebrate toxic agents (VTAs) and other hazardous substances when they are:

- intended to be applied or used in a catchment area from which water is drawn for human consumption, or
- applied in any other area where a risk to public health may be created.

These guidelines aim to help manage the risk to public health resulting from the use of VTAs and other hazardous substances in pest control operations. Properly applied, these guidelines will assist in:

- applying the appropriate conditions
- modifying the conditions, if required, in response to the specific risk of an operation.

Not all VTAs and other hazardous substances require a permission. These guidelines apply only to VTAs and other hazardous substances that are listed in Schedule 1 of the Environmental Protection Authority's (EPA's) Instrument of Delegation. (Appendix 1 lists the VTAs and other hazardous substances that require a permission.)

Permissions are only required where a risk to public health may be created or VTAs and other hazardous substances are being applied in a drinking water catchment. If the public health risk assessment suggests that the likelihood of a public health risk is low or that the existing controls are appropriate to manage any public health risk, it is not necessary to issue a permission.

Out of scope

Non-target species: Public concerns about impacts on non-target species should be referred to the Department of Conservation (native species) or the Ministry for Primary Industries (domestic and agricultural animals), as applicable.

Occupational risks: Occupational exposures and other occupational risks are covered under the Health and Safety at Work Act 2015.

Other legal requirements (including statutory controls): Operators must be aware of and comply with all relevant legal obligations. The conditions of a permission are legally binding; however, compliance with conditions does not necessarily mean that operators have met all legal requirements for the use of VTAs and other hazardous substances. It is the responsibility of operators to comply with all legal requirements, including but not limited to, the Agricultural Compounds and Veterinary Medicines Act 1997, Animal Products Act 1999, Biosecurity Act 1993, Civil Aviation Act 1990, Conservation Act 1987, Crimes Act 1961, Food Act 2014, Hazardous Substances and New Organisms Act 1996 (HSNO Act), Health and Safety at Work Act 2015, Health and

Safety at Work (Hazardous Substances) Regulations 2017, Land Transport Act 1998, Resource Management Act 1991 and Water Services Act 2021.

Physical hazard: flying bait: These guidelines do not cover the physical hazards of flying bait because the warning signs placed around an area to be baited should inform people that an aerial operation will be occurring in the immediate area. Any reports of people being struck by bait should be referred to the operator.

Pre-feeding: Pre-feeding with non-toxic baits before the aerial sowing of 1080 baits is often used to prime target species and to reduce bait shyness. Pre-feeding baits are considered to be non-toxic, and no permission is required.

VTAs and other hazardous substances in drinking water: Taumata Arowai is the water services regulator and implements the Water Services Act 2021. If a drinking water source becomes contaminated, the drinking water supplier and Taumata Arowai should be notified. To notify Taumata Arowai, email notifications@taumataarowai.govt.nz. If there is an immediate risk to public health from drinking water, call 04 889 8350.

VTAs and other hazardous substances in food: The Ministry for Primary Industries is the food safety regulator. If the food supply becomes contaminated (eg, with feral animals that have consumed 1080), notify the Ministry for Primary Industries by email info@mpi.govt.nz or phone 0800 00 83 33.

Chapter 1: Public health risk assessment

Main points

- Risk assessment includes hazard identification, dose-response assessment, exposure assessment and risk characterisation.
- The EPA provides authoritative advice on the hazard identification and dose-response assessment for VTAs and other hazardous substances.
- Public health risks can be managed by preventing public exposures to VTAs and other hazardous substances.

Risk assessment

Risk is the probability that specified adverse effects will occur. The United States Environmental Protection Agency (USEPA) defines human health risk assessment as:

evaluating the toxic properties of a chemical and the conditions of human exposure to it in order both to ascertain the likelihood that exposed humans will be adversely affected, and to characterise the nature of the effects they may experience (USEPA 1993).

A widely used risk assessment model comprises four interrelated phases (USEPA 1993).

- **Hazard identification:** Assess available evidence on the presence and hazards of substances likely to cause adverse effects.
- **Dose-response assessment:** Determine the degree of the effects at different doses.
- **Exposure assessment:** Estimate the magnitude, duration and frequency of human exposure to substances of concern and the number of people exposed via different pathways.
- **Risk characterisation:** Combine the information gained from the hazard identification, dose-response assessment and exposure assessment phases to estimate the risk associated with each exposure scenario.

Hazard identification and dose-response assessment

In New Zealand, the Environmental Protection Authority (EPA) has assessed the hazardous properties of VTAs and other hazardous substances, including dose-response. It has also set appropriate controls to manage the risks from these

substances, including public health risks. For information on the EPA's assessments, see the EPA website, including:

- the Chemical Classification and Information Database (CCID) for information on the hazards of VTA active ingredients: <https://www.epa.govt.nz/database-search/chemical-classification-and-information-database-ccid/>
- the Approval Index: <https://www.epa.govt.nz/assets/Uploads/Documents/Hazardous-Substances/GHS2/Individual-Hazardous-Substance-Approvals.pdf> (pdf, 6.2MB).

For information on specific assessments, see the documents below. Note the controls section in the decision documents is no longer relevant. Refer to the reissued approvals for the current controls.

Sodium fluoroacetate (1080)

- EPA. 2007b. *1080 Reassessment Decision*. <http://www.epa.govt.nz/assets/FileAPI/hsno-ar/HRE05002/HRE05002-065.doc> (Word doc, 2.1 MB).
- EPA. 2007a. *Evaluation and Review Report: Reassessment of 1080 (HRE05002)*, Appendix M: Exposure and risk assessment (1080 and cyanide): human health. <http://www.epa.govt.nz/assets/FileAPI/hsno-ar/HRE05002/HRE05002-044.pdf> (pdf, 0.4 MB).

Cyanide

- EPA. 2007a. *Evaluation and Review Report: Reassessment of 1080 (HRE05002)*, Appendix M: Exposure and risk assessment (1080 and cyanide): human health. <https://www.epa.govt.nz/assets/FileAPI/hsno-ar/HRE05002/475377593c/HRE05002-044.pdf> (pdf, 0.4 MB).
- HSNO Chemical Classification Information Database: Sodium cyanide. <https://www.epa.govt.nz/database-search/chemical-classification-and-information-database-ccid/view/B594DD80-95F9-462B-86FA-B5E010A949B6>.

Yellow phosphorus

- Eason CT, Wickstrom M. 2001. *Vertebrate Pesticide Toxicology Manual*. <http://www.doc.govt.nz/documents/science-and-technical/docts23.pdf> (pdf, 0.4 MB).

DRC 1339 (3-chloro-p-toluidine hydrochloride)

- Animal Control Products Ltd. 2006. *Safety Data Sheet: DRC 1339*. <https://pestoff.co.nz/wp-content/uploads/2021/03/DRC1339.pdf> (pdf, 0.2 MB).
- New Zealand Food Safety Authority. 2002. *Controlled Pesticides: DRC 1339 for bird control*. Wellington: New Zealand Food Safety Authority.
- United States Environmental Protection Agency, National Service Center for Environmental Publications website. <http://www.epa.gov/nscep/>

Microencapsulated zinc phosphide (MZP)

- EPA. 2009b. *Evaluation and Review Report: Application for approval to import or manufacture microencapsulated zinc phosphide (MZP) and MZP paste for release.* Application number: HSR09013. <https://www.epa.govt.nz/assets/FileAPI/hsno-ar/HSR09013/bbd9a1178d/HSR09013-HSR09013-Evaluation-and-Review-Report.pdf> (pdf, 1.7 MB).
- EPA. 2011. *MZP and MZP Paste Decision.* <https://www.epa.govt.nz/assets/FileAPI/hsno-ar/HSR09013/7f691f0fd6/HSR09013-HSR09013-Decision-amended.pdf> (pdf, 0.4 MB).

Other hazardous substances – ant baits

Advion, Campaign and Amdro (ant baits) are not VTAs; however, aerial applications require a permission under section 95A of the HSNO Act.

- EPA. 2008. *Evaluation and Review Report: Application for approval to import or manufacture Advion Fire ant bait for release.* Application number: HSR06132. <https://www.epa.govt.nz/database-search/hsno-application-register/view/HSR06132>.
- EPA. 2021c. *HSNO Controls for Advion Fire Ant Bait.* https://www.epa.govt.nz/assets/RecordsAPI/Advion_fire_ant_bait_HSR007905.pdf (pdf, 0.2 MB).
- EPA. 2007c. *Notification of Decision to Import or Manufacture Campaign Ant Bait and Amdro Fire Ant Bait for Release.* <https://www.epa.govt.nz/assets/FileAPI/hsno-ar/HSR06133/fa0cfb3282/HSR06133.doc> (Word doc, 0.2 MB).
- EPA. 2021a. *Approval for Campaign Ant Bait.* Includes HSNO controls. https://www.epa.govt.nz/assets/RecordsAPI/Campaign_ant_bait_HSR007881.pdf (pdf, 0.2 MB).
- EPA. 2021b. *Approval for Amdro Fire Ant Bait.* Includes HSNO controls. https://www.epa.govt.nz/assets/RecordsAPI/Amdro_Fire_Ant_Bait_HSR007882.pdf (pdf, 0.2 MB).

Exposure assessment

Exposure risk varies according to the type of VTA or other hazardous substance and the method of applying baits. Other influences on the risk of exposure are the terrain in the operational area and its proximity to residential and/or recreational areas.

Potential exposure pathways can be assessed from applications to carry out operations. The exposure assessment is part of the process of identifying, applying and, where necessary, modifying the Model Permit Conditions.

Oral exposure: The most significant acute exposure route to the public is ingestion, for example, when an unsupervised child picks up and eats bait. Operators must carefully consider bait accessibility and placement before any operation and carry out track clearances thoroughly. A second track clearance may be appropriate following aerial operations, for example on heavily used tracks and/or if baits may have been caught in forest canopies.

Inhalation exposure: Non-occupational exposure to VTAs and other hazardous substances may occur through inhaling fumes from bait, particularly cyanide. Dust containing 1080 from laced bait may be present around loading sites; however, these sites are restricted and non-occupational inhalation exposure should not occur. A person (particularly a child) may pick up and sniff a poisoned bait; however, the risk is limited compared with oral exposures.

Dermal exposure: Absorption may be greater in the presence of dermatitis or another skin injury, particularly cuts or abrasions on exposed areas when handling the bait. Unsupervised children are most at risk from dermal exposure because they are more likely than adults to have cuts or abrasions, and are more likely to pick up and handle bait.

Risk characterisation

Risk characterisation necessarily includes assumptions and uncertainties that need to be identified and managed appropriately, using the available information, and the information on the planned operation that the applicant provides. Appendix 2 provides further notes to assist with a risk assessment. Generally, aerial operations may create greater risks of exposure to the public than ground-based operations, because baits can be laid on the ground with greater precision.

Preventing public exposures will ensure the public health risk is managed. In addition to the mandatory controls, specifying distances at which baits may be applied near tracks and huts (exclusion zones) reduces the risk that the public (particularly children) will be exposed to VTAs and other hazardous substances.

Chapter 2: Roles and responsibilities

Roles of agencies under the Hazardous Substances and New Organisms Act 1996

There are several enforcement agencies that may be involved in VTA and other hazardous substance operations. The roles and responsibilities are laid out in the EPA's guidance, *Roles and Responsibilities: Hazardous substance enforcement under the HSNO Act 1996* (EPA 2020).

- The Civil Aviation Authority manages the risks associated with hazardous substances in the aviation industry by assessing reported incidents for levels of compliance. The Civil Aviation Authority is a designated agency under the Health and Safety at Work Act 2015, which includes a role of enforcement related to aircraft as workplaces while they are in operation. Another role is to ensure pilots involved in aerial operations of VTAs are appropriately trained to understand the risks of the VTAs.
- The Department of Conservation has responsibilities for issuing permissions relating to conservation land, and protecting native species (including undertaking investigations for native species management).
- The Ministry of Health is responsible for enforcing the HSNO Act where it is necessary to protect public health. If the incident is likely to affect public health, the Ministry of Health generally plays a supporting role to other agencies (rather than leading enforcement). The definition of 'public health' requires a threshold to be reached before the Ministry will act. The Ministry decides whether the threshold for public health risk has been reached. The Ministry contracts the delivery of public health services from providers, who may employ staff appointed as public health HSNO enforcement officers by the Director-General of Health.
- Territorial authorities are responsible for leading hazardous substance enforcement in their district for all incidents or non-compliances happening in any other place that is not a workplace, such as a public place or a residential home.
- WorkSafe New Zealand enforces the Health and Safety at Work Act 2015 and is responsible for places of work and occupational exposure to hazardous substances. WorkSafe New Zealand, or a designated agency, will be the lead agency for all incidents and non-compliances that happen in a workplace. WorkSafe New Zealand also enforces the Health and Safety at Work (Hazardous Substances) Regulations 2017, which set further controls and authorisation regimes, such as certified handler and controlled substance licence requirements on most of the VTAs used.

Roles of other parties

A range of other individuals, organisations and agencies may also carry responsibility for managing the risks associated with different aspects of VTA and other hazardous substance operations. These other parties include but are not necessarily limited to the following.

- Applicants have key roles in providing information to enable good risk assessment and the application of the right permit conditions, modified when necessary.
- The Ministry for Primary Industries enforces the Food Act 2014 and the Agricultural Compounds and Veterinary Medicines Act 1997. It is responsible for food safety, including 'wild foods', and animal health and safety.
- Ospri manages and implements the National Pest Management Strategy for bovine tuberculosis in New Zealand under the Biosecurity Act 1993.
- Taumata Arowai is the water services regulator and implements the Water Services Act 2021. Where appropriate, Taumata Arowai will provide information on water supplies to help permit issuers apply appropriate conditions to protect source water. Taumata Arowai can be contacted by email at info@taumataarowai.govt.nz

Role of operators

Pest control operators who use VTAs and other hazardous substances have responsibility for managing the risks that may arise from their use. Their role includes:

- assessing risks, particularly any site-specific risks, through planning, consultation and applications processes
- designing and carrying out operations in accordance with statutory controls, permit conditions and other legal requirements
- following industry best practice
- reporting any incidents involving VTAs and other hazardous substances
- meeting all statutory requirements including some certification requirements (eg, certified handler, controlled substance licence).

Operators need to follow the consultation process as prescribed in the EPA's (2009a) *Communications Guideline for Aerial 1080 Operations*. When applying for a permission, operators should outline their communications **for managing public health risks only** on the VTA and other hazardous substance application form.

For guidance for operators, refer to the following resources.

- EPA. 2009a. *Communications Guideline for Aerial 1080 Operations*. <http://www.epa.govt.nz/assets/Uploads/Documents/Hazardous-Substances/Guidance/1080-Communications-Guidelines.pdf> (pdf, 0.4 MB).
- EPA. 2007b. *1080 Reassessment Decision*. Includes recommendations about public consultation. <http://www.epa.govt.nz/database-search/hsno-application-register/view/HRE05002>.

Chapter 3: Permissions

Main points

- Public health risks are managed by minimising the public's exposure to VTAs and other hazardous substances.
- Public health risk management for VTAs and other hazardous substances centres on the appropriate and considered use of the Model Permit Conditions.
- For each Model Permit Condition, these guidelines provide a brief commentary and set out its scope, rationale, modification options and an example of a modification.

Permit conditions are in addition to controls under the HSNO Act and other statutory requirements. Operators must be aware of and make provision for compliance with all requirements under all relevant legislation.

Requirement for permissions

Permissions are required for the use of certain VTAs and other hazardous substances when they are:

- intended to be applied or used in a catchment area from which water is drawn for human consumption, or
- applied in any other area where a risk to public health may be created.

Not all VTAs and other hazardous substances require a permission for use. These guidelines apply only to VTAs and other hazardous substances that are listed in Schedule 1 of the EPA's Instrument of Delegation (see Appendix 1).

Permissions are also required only where VTAs and other hazardous substances are being applied in drinking water catchments or a risk to public health may be created. If the public health risk assessment suggests that the likelihood of public health risk is low or that the existing controls are appropriate to manage any public health risk, it is not necessary to issue a permission.

Definition of an area 'where a risk to public health may be created'

This area applies in general to places where the public has access (eg, parks) and to huts, roads, tracks and similar used by the public.

VTA and other hazardous substance applications on private land

Private land may be a place where risk to public health could be created, and permission is required, if, for instance, it includes an access route across private land that members of the public commonly use.

The public health risk assessment determines whether a permission is needed. It is irrelevant whether the land is publicly or privately owned, although the nature of land ownership may affect whether the public have access.

Granting VTA permissions on Department of Conservation land

VTA permissions are required for operations on land managed by the Department of Conservation to which the public are likely to have access. This includes conservation estate that has publicly accessible tracks and huts. Permissions are not required for areas where the public are not permitted (such as offshore islands with permit-only access or other areas with controlled access).

Department of Conservation officials also issue permissions for the use of VTA on lands the Department administers or manages, and may require applicants to supply their health permission as evidence that appropriate conditions are in place to protect public health when necessary.

Issuing permissions

The role of the person issuing a permission includes:

- assessing applications to apply VTAs and other hazardous substances, including undertaking risk assessments
- communicating with applicants
- deciding on and setting conditions in permissions (including adding, deleting or otherwise varying any condition) to manage potential public health risks
- extending, renewing or revoking permissions
- managing enquiries and complaints.

Communicating with applicants

Communication with applicants should be open and ongoing. An application for permission to use a VTA or other hazardous substance may require discussion with the applicant in order to clarify aspects of the application and the conditions that may be imposed.

Full information about the risk assessment and operational processes is particularly important when Model Permit Conditions are modified to meet local conditions and/or vary from those used for previous operations in the same or similar areas.

It is important to ensure that applicants understand why, and on what basis, particular conditions have been modified or imposed in particular ways. This should be communicated to the applicant in a transparent and appropriate manner.

If the applicant is not happy with a permit condition, they can:

- request, in writing, the reasons why one or more conditions are imposed
- request an independent review of the permit condition(s) in question
- request an appeal under the HSNO Act. Section 125(1A) allows an applicant to appeal to the District Court about the terms and conditions of a permission; or if a permission has been declined or revoked
- seek a judicial review of the process by which one or more conditions were imposed (see page 16 for further information).

Open lines of communication also help to ensure that, if a complaint or incident occurs, all parties are informed rapidly and that the appropriate responses can be launched as soon as possible.

Receiving applications

Applicants need to make applications for the use of VTAs and other hazardous substances on the current EPA-approved form available on the Ministry of Health's website: <https://www.health.govt.nz/publication/issuing-permissions-vertebrate-toxic-agents-vtas-guidelines-public-health-units> under 'Downloads'.

When an application is received, an acknowledgement will be sent to the applicant, and discussions about timeframes for proposed operations initiated to ensure the application can be prioritised and processed in a timely way. Appendix 3 gives an example of a checklist that can be used to ensure the applicant has provided all relevant information.

Application identification codes: An application identification code is assigned to each application. Application identification code yyyy/xxx/ABC stands for:

- yyyy – year granted (eg, 2022)
- xxx – application number assigned by person issuing permission
- ABC – initials of the person granting the permission.

Operational maps: A map sufficiently representing the operational area should be included in the application (refer to Section A of the application form). Appendix 4 provides an example of an appropriate operational map to assist with the type of information required when assessing an application.

The person reviewing the application may request any other maps to adequately identify areas of risk, or more accurately identify areas to which controls will be applied.

The person processing the application should record any request for (and receipt of) additional maps.

Permissions

Permissions for the use of VTAs and other hazardous substances need to be issued on the current EPA-approved form available on the Ministry of Health's website:

<https://www.health.govt.nz/publication/issuing-permissions-vertebrate-toxic-agents-vtas-guidelines-public-health-units> under 'Downloads'.

Duration

The period of the permission needs to include time from the start of the operation until the operator has checked for any public health risks (such as the presence of baits) following the last application of the hazardous substance(s).

Permissions should allow some flexibility for weather and other circumstances that may delay an operation beyond the permission expiry date. No timeframe is given for this flexibility; it is expected that the permission issuer will use their discretion to decide on what is practical both for the operator and for ensuring public safety.

A permission may be issued for up to three years if the following conditions are met.

- The operation has already been carried out each year for a minimum of five years.
- The operation has not changed significantly for at least three years (see examples of significant changes below).
- Public consultation has occurred on the proposed dates.
- No valid incidents or complaints have occurred for at least five years.
- The conditions in the permissions previously issued have not changed significantly for at least three years.
- The operator must inform the person issuing the permission of any significant changes, complaints or incidents.

When issuing permissions that may cover repeated operations, it is important to ensure local circumstances have not changed in ways that would require the public health risk to be reassessed. Examples of these significant changes are a change in methodology (eg, moving from ground-based to aerial operations), a change in the pesticide being used, extending the operational area beyond the area included in the permission, a change in operator, a change in land ownership and a change in land use (including new homes in the operational zone).

If the conditions for a three-year permission cannot be met, the permission should be issued only for the specific operation, up to one year from the commencement date of the operation.

Extending permissions

If an operation is significantly delayed (eg, because of an unexpectedly long period of adverse weather), then the permission may need to be extended. If an extension is

longer than 12 months, or if the applicant cannot meet the criteria for an extension or renewal, then a new application is needed.

A permission date can be extended for a maximum of 12 months from the original finish date if the application meets the following criteria.

- Consultation on the proposed change of dates has occurred.
- The application makes no changes to the methodology, controls, conditions or operation areas.
- No non-compliances or incidents have been identified.

Renewing permissions

For a VTA operation that routinely uses a controlled substance, a permission can be renewed if the operation meets the criteria below. The renewed application may be an updated version of the previous application but must demonstrate the applicant has assessed whether it involves any changes that are likely to affect the public health risk. Such changes may include, for example, that the operational area has gained new facilities such as camping grounds, homes, roads or walking and cycling tracks.

It is the responsibility of the issuing officer to ensure that each permission is renewed appropriately and to avoid situations where a permission is renewed year after year when a three-year permission is more appropriate.

The risk assessment should focus on any changes to the risk profile and management of any risks identified in earlier operations. The permission should include relevant conditions, based on the previous permission and updated to reflect the new risk assessment.

A permission can be renewed for a maximum of three years from the original finish date if the application meets the following criteria.

- Consultation on the proposed change of dates has occurred.
- The application makes no changes to the methodology, controls, conditions or operation areas.
- No non-compliances or incidents have been identified.

Revoking and amending permissions

A permission may be revoked if the public health risk is not adequately managed. This includes situations where the operator does not abide by the conditions of the permission, or when there is a need to review the decision on permission conditions. Similarly, a permission can be amended to have additional conditions applied.

In both cases, notify the EPA by emailing permissions@epa.govt.nz.

Registering permissions

The EPA maintains a register of permissions issued for VTAs and other hazardous substances, as required under section 20 of the HSNO Act.

Email copies of permissions to permissions@epa.govt.nz.

Documents with scanned signatures are acceptable. Send one permission per email with the permission documents attached (cover page, Schedule 1, Schedule 2 and Schedule 3). If the maps are not embedded in the permission documents, send them as JPEGs, TIFFs, GIFs, BMPs or PDFs.

It is **not** necessary to send a copy of the application form.

Managing enquiries and complaints

A number of local, regional and national agencies are involved in VTA and other hazardous substance operations and management, including local and regional authorities and national government agencies. When members of the public make enquiries or report concerns or complaints about the use of hazardous substances, it is important to initiate relevant inter-agency liaison. The location and situation of the incident being investigated will determine who the lead agency will be.

VTA and other hazardous substance operations, in particular aerial applications of 1080, are often the subject of enquiries and requests under the Official Information Act 1982. Such enquiries can include complaints or reports of incidents, or queries about the scope, type and risks of operations.

Notifying a complaint or incident

Permit conditions require operators to report any complaint or incident to the identified contact person within 24 hours of the incident or of receiving the complaint.

When the contact person receives a complaint or notice of an incident involving VTAs or other hazardous substances, they must record the details of the complaint, regardless of whether any further action is taken.

Assessing whether it is a public health issue

The Ministry of Health is responsible for ensuring that the provisions of the HSNO Act are enforced where it is necessary to protect public health.

The Investigation and Surveillance of Poisonings and Hazardous-substance Injuries: Guidelines for public health units (Ministry of Health 2019) and *The Investigation and Surveillance of Agrichemical Spraydrift Incidents: Guidelines for public health units* (Ministry of Health 2007) provide comprehensive advice on how to investigate notifications of hazardous-substance injuries and potential exposures to off-target applications, including details on the use of Graded Response Protocols.

If the complaint relates to a public exposure and is legitimate, an investigation should determine if the operator has breached permit conditions and if any further action is warranted.

Auditing permissions

When a complaint or notice of an incident involving VTAs or other hazardous substances is validated, an audit of the operation may be undertaken. Audits are intended to verify that the applicant has complied with conditions in the permission.

The balance between desktop and field audits will be determined by the public health risk and the level of confidence in the applicant.

Field audits involve physically visiting the site of operation and inspecting the operator's procedures in the field to check compliance with some selected conditions in the permission. In deciding how many and which operations to audit in the field, consider the hazards and risks involved, the complexity of the operation, the experience of the operator(s) and the practicality of carrying out an audit. For example, there would be limited benefit in conducting a field audit of an aerial operation carried out in isolated back country involving few or no public tracks.

Desktop audits involve discussion with the operator and, if appropriate, verbal or written confirmation from the operator, WorkSafe New Zealand or other relevant agencies that controls have been applied appropriately.

If an operator breaches the permit conditions, then the EPA must be informed of the complaint by emailing: **hsincidents@epa.govt.nz**. The EPA will need to be notified that the event has occurred, if any public health risks were present or if it is to be passed to another agency for review and investigation.

The results of the audit, including the rationale for holding a desktop or field audit, should be recorded with the other documentation relating to the permission.

Permission not issued

On occasion, VTAs and other hazardous substances may be used without a permission. In these instances, if alleged non-compliances are reported, no breaches in permission conditions have occurred as no permission was required. This means that a different lead agency investigates the alleged non-compliance: either WorkSafe New Zealand for commercial operations or the territorial authority in any other place.

Involving other agencies

If any other agencies are involved or have associated responsibilities, they must be informed of the complaint or the complaint should be referred to the appropriate agency for investigation and action. The following examples of when to involve another agency may apply in many situations but are not an exhaustive list.

- Refer alleged non-compliance with controls on the use of VTAs or other hazardous substances to WorkSafe New Zealand.
- Refer suspected deaths of cattle to the Ministry for Primary Industries.
- Refer suspected deaths of native animals to the Department of Conservation.

- Refer suspected misuse of VTAs (by the general public) or deliberate civil disobedience to the New Zealand Police.

Judicial review

Judicial reviews cover the **process** followed in making a decision using statutory powers; they do not cover the outcome of the process (ie, they do not cover the decision itself). There are three main grounds for judicial review.

- **Legality:** For example, was the decision signed off by someone with the appropriate delegation? Is the decision within the scope of the person's statutory powers?
- **Reasonableness:** For example, is the decision reasonable in the circumstances? Would other sensible and reasonable people have come to the same conclusion?
- **Fairness and natural justice:** For example, did the applicant have a fair opportunity to have their say? Was the decision influenced by outside factors? Is the decision consistent with comparable situations?

As a judicial review deals with process, it is critical to document the decision-making process and to clearly demonstrate that it included a robust risk assessment that was tailored to the specific operation in question. A standard or 'rubber stamp' approach will not demonstrate a robust process.

If the person signing the permission is not the person who conducted the risk assessment, then the person signing the permission **must** satisfy themselves that the conditions imposed are reasonable and fair, meet the expectations agreed with the applicant and are demonstrably based on a robust risk assessment.

Model Permit Conditions

The Model Permit Conditions are a tool to help manage the public health risk of VTA and other hazardous substance operations.

These guidelines are intended as practical guidance in assessing:

- which of the Model Permit Conditions to use for each VTA or other hazardous substance application
- whether any conditions need to be modified to adequately manage public health risks associated with that application.

Each Model Permit Condition has guidelines attached to it to ensure that conditions are imposed (and/or modified) where they are necessary to manage a particular area of risk. Commentaries are only included to clarify conditions if needed.

General requirements

CONDITION 1: Start date and duration

This approval is granted for the period commencing (*insert start date*) to (*insert end date of up to three years from the operational start date*). (*Insert name*) shall be notified if there is any alteration to the intended date of the application.

Advise (*insert name*) of the commencement of the application of (*insert name(s) of VTA(s) or other hazardous substance(s)*), at least 12 hours before commencing application.

Advise (*insert name*) of any significant changes, complaints or incidents relating to this operation.

Contact (*insert name*) at least two weeks before the expiry date of the original approval period if you wish to continue the operation after this date. A permission can be extended only if it meets certain criteria.

Scope	All VTA and other hazardous substance uses.
Rationale for the condition	Ensures awareness that the operation is commencing. This makes it easier for the permission dates to be extended in the event of poor weather or other variable circumstances.
Commentary	The intent of any permission is to ensure public health risks relating to any hazardous substance operation are managed to minimise risks, and ensure there have been no significant changes in circumstances (eg, increased public access). The condition applies to the first application of VTAs and other hazardous substances in an operation. A permission is only valid for the specific operation. The 'end date' on a permission does not refer to the last date when one or more applications of hazardous substance(s) can be made. Sufficient time should be allowed to check for public health risks such as the presence of baits in excluded areas. Such factors should be taken into account when considering the end date of a permission being issued. The requirement to advise of any significant changes is to ensure circumstances have not changed. in ways that would require the public health risk to be reassessed. Examples are a change in methodology (eg, moving from ground-based to aerial operations), a change in the pesticide being used, extending the operational area beyond the area included in the permission, a change in operator, a change in land ownership and a change in land use (including new homes in the operational zone).
Modification options	If necessary, specify what forms of notification are acceptable, such as 'in writing' or 'by telephone'.
Example	The end date of the permission may need to be varied to enable relevant checks to be completed.

CONDITION 2: Changes to permission

Advise (*insert name*) in writing of any changes to the proposed operation.

Scope	All VTA and other hazardous substance uses.
Rationale for the condition	Ensures awareness of changes to the operation that may affect public health risks.
Commentary	<p>Only minor amendments, such as extension to allow for adverse weather, or correcting typographical errors, are recommended. A new permission should be granted if significant changes are made, such as adding new or different VTAs.</p> <p>The intent of any permission is to ensure public health risks relating to any hazardous substance operation are managed to minimise risks, and ensure there have been no changes in circumstances (eg, new homes). A permission is only valid for the specific operation.</p>
Modification options	The condition may be modified if circumstances change during the operation, but discretion needs to be carefully applied. Dates should not be varied to extend an operation indefinitely.
Example	If an operation is significantly delayed (eg, because of unexpectedly long periods of adverse weather) and there is insufficient time for checks following the last application of hazardous substance(s), then the permission may need to be amended to extend the end date so that the checks can be completed.

Notifications

CONDITION 3: Landowner and occupier notification

Before commencing the operation, the applicant shall notify occupiers and, as far as practicable, owners of land, homes or buildings within the operational area and immediately abutting the operational area. Occupiers include schools, community and club halls and facilities. The notice must be given sufficiently prior to, but within two months of, the proposed application of (*insert name(s) of VTA(s) and other hazardous substance(s)*). If requested by the person notified, notification shall be repeated at a mutually agreed time before the proposed application.

The notice shall specify:

1. the name and nature of the VTA(s) and other hazardous substance(s)
2. the approximate date on which the VTA(s) and other hazardous substance(s) will be applied
3. a description of the area over which the VTA(s) and other hazardous substance(s) will be applied
4. the name and address of the person responsible for applying the VTA(s) and other hazardous substance(s)
5. information on safety and precautions with respect to the VTA(s) and other hazardous substance(s) being used.

Scope	All VTA and other hazardous substance uses
Rationale for the condition	Legal requirements 1 to 4 exist for 1080 and MZP paste only. This condition ensures that landowners are notified when other VTAs or hazardous substances are used. It ensures that land occupiers and owners are informed about the risks of the operation and the use of VTAs or other hazardous substances.

CONDITION 3: Landowner and occupier notification

Commentary	<p>The public health risk assessment may identify occupiers and owners who should be informed of the operation.</p> <p>Operators must also comply with signage requirements under regulation 13.19 of the Health and Safety at Work (Hazardous Substances) Regulations 2017</p> <p>https://www.legislation.govt.nz/regulation/public/2017/0131/latest/DLM7366722.html</p>
Modification options	<p>This condition may be modified where it is useful from a public health perspective to notify a listed wider group of owners/occupiers.</p> <p>A telephone contact number may also be required.</p> <p>In some cases, where nearby owners/occupiers commonly use the operational area, the condition could be widened to include owners/occupiers even if they are not immediately abutting the operational area.</p> <p>The applicant may also wish to notify key stakeholders such as tramping or hunting clubs or outdoor education providers where operations include public land that these groups frequently use.</p> <p>A greater distance between the operation zone boundary and occupiers may be applied.</p>
Example	<p>An example distance relating to proximity for nearby owners may be 150 m or alternatively a statement may be made that refers to 'homes identified as per Section "X" of the application'.</p>

CONDITION 4: Complaints and incidents

Any incidents or complaints relating to the operation that are likely to impact on public health shall be reported to (*insert name*) within 24 hours of the incident or complaint.

Scope	All VTA and other hazardous substance uses.
Rationale for the condition	This condition includes potential public health risks, such as baits found in an area where the public may have access. It also includes any reports of public exposures.
Commentary	It does not include incidents such as persistent vexatious complaints or complaints where public exposure is implausible.
Modification options	The period of time set for making a notification may be altered (for example, to 'within one or two working days').

Areas where a risk to public health may be created

CONDITION 5: Protection of the public

No (insert name(s) of VTA(s) and other hazardous substance(s)) shall be (specify 'aerially' or 'ground') applied within the distances listed below, and not where (specify 'it is' or 'they are') within sight of, the following dwellings, huts, access points, camping and public areas, walking and vehicle tracks, roads and lay-bys:

List and specify exclusion distance for each public area, specify whether aerial or ground-based application.

Scope	All VTA and other hazardous substance uses.
Rationale for the condition	<p>This ensures that VTA(s) and other hazardous substance(s) are applied no closer than a minimum distance away from public areas in order to reduce the risk of direct human contact with baits or where proposed mitigating measures and/or controls may not be sufficient to prevent an exposure pathway from occurring.</p> <p>The exclusion distance will generally be shorter for ground-based applications as the VTA(s) can be placed with more accuracy, particularly controlling for visibility of baits. Some operators will do aerial applications of the general area and ground-based applications closer to listed sites/amenities.</p> <p>To reduce the risk of direct contact with baits, no baits are permitted to be within sight or easy access of the public.</p> <p>Tracks include any purposefully created path, route or road for the public to follow. This can include paths, routes or roads with or without overlaid surfaces and may or may not have markers present. While it is considered that all Department of Conservation and private property tracks, roads and routes will be taken into account, the operator may wish to include or exclude unofficial tracks (eg, shortcuts or routes used by trapping parties, hunters or experienced trampers).</p>
Modification options	<p>Exclude this condition if the person assessing the application is confident that the mitigating measures/controls the operator proposes are sufficient to prevent an exposure pathway from being present and the risk assessment supports this.</p> <p>The base exclusion distance for ground operations should be 20 m. The base exclusion distance for aerial operations should be 80 m.</p> <p>The base exclusion distances may be varied, or removed, if defined mitigating controls adequately manage public health risks, depending on the terrain and vegetation, accessibility and visibility of bait, method of application, and public use patterns. Sites with generally high use or with high use during the planned operation time (eg, a long weekend) may require a longer exclusion distance. Conversely, an 80 m aerial exclusion may be excessive in rough terrain with low use and heavy vegetation.</p> <p>Use generic wording rather than listing locations where it is not feasible or possible to obtain a complete list. One approach is to list the known locations, before adding wording such as 'and any other dwellings, tramping huts, bivvies/shelters, tent camping sites, picnic areas, watercraft landing points, walking and vehicle tracks, roads and lay-bys in the area'.</p> <p>Alternatively, reference the overall section of the application that contains (specifies) the information.</p> <p>Important: Where both aerial and ground-based applications are proposed, repeat the condition for each type of application.</p>

CONDITION 5: Protection of the public

Example 1	<p>An applicant proposes the ground-based application of cyanide paste in the vicinity of a popular tramping hut that families and school groups frequently use (Hut 1). Hut 1 stands in a large grassy clearing, which includes a small number of trees within 20 m of the hut. Thick bush cover begins 30 m from the hut. The exclusion distance is adjusted to 80 m to ensure that all bait is placed away from the hut and in vegetation cover that will help limit the accessibility and visibility of the bait.</p> <p>Hut 2 is within the same operational area but is extremely isolated, located in steep country and thick bush, and seldom used. The exclusion distance is adjusted to 20 m for Hut 2.</p> <p>In the condition, the locations and distances are listed as follows:</p> <ul style="list-style-type: none">• Hut 1: 80 m• Hut 2: 20 m.
Example 2	<p>An application for aerial 1080 use on forestry land includes a mapped vehicle track that is now closed. The entry to the block is by locked gate, and the mapped track has deteriorated at several points because of storms, including near the gate, so it is now impassable by vehicle. There is heavy brush/blackberry coverage in the area. The area is not known to be used for recreational purposes. The risk assessment confirms the operator's advice.</p> <p>This condition was not used as the risk to public health is limited. Not utilising condition: if a public area can be controlled to avoid exposure pathways from being present, this condition can be omitted.</p>
Example 3	<p>An operational area abuts a section of a state highway that includes a lay-by and lookout. A combined aerial and ground operation is planned for the area downhill from the lay-by, which sits above a 2 m bluff. The ground below the lay-by is covered with thick bush. The remainder of the area abutting the road is covered with thick bush to the road verge and rises steeply from the road.</p> <p>Given the nature of the terrain and vegetation cover, ground-applied VTAs were excluded from within 10 m of the lay-by. As the proposed operation also includes an aerial 1080 application, 1080 was not permitted to be aerially applied within 80 m of the listed lay-by.</p>
Example 4	<p>An application covers a remote back-country area with four homes. All homes are in isolated locations surrounded by bush.</p> <p>The condition is modified to list each home by road address or GPS reference and baits were not laid or applied within 80 m of each dwelling.</p>

CONDITION 6: Aerial applications to dwellings, huts, access points, camping and public areas, walking and vehicle tracks, roads and lay-bys

(Insert name(s) of VTA(s) and other hazardous substance(s)) may be aerially applied to the following dwellings, huts, access points, camping and public areas, walking and vehicle tracks, roads and lay-bys but not during, or within 24 hours before the start of, school holidays, public holidays or public holiday weekends: *(list)*.

If *(insert name(s) of VTA(s) and other hazardous substance(s))* is aerially applied to any of the above-listed dwellings, huts, access points, camping and public areas, walking and vehicle tracks, roads and lay-bys, inspect those dwellings, huts, access points, camping and public areas, walking and vehicle tracks, roads and lay-bys as soon as possible and no more than 24 hours after the aerial application and make reasonable efforts to find and remove all bait and, if encountered, animal carcasses.

Undertake a second inspection of the following dwellings, huts, access points, camping and public areas, walking and vehicle tracks, roads and lay-bys, and make reasonable efforts to find and remove all bait and, if encountered, animal carcasses: *(list tracks to undergo a second clearance)*. The

CONDITION 6: Aerial applications to dwellings, huts, access points, camping and public areas, walking and vehicle tracks, roads and lay-bys

second inspection shall be made at least 24 hours (*or insert agreed timeframe*) after the toxic bait application. It should be timed to take place either immediately after the occurrence of strong winds, or immediately before the weekend or commencement of school holidays or public holidays, whichever occurs first.

Scope	For aerial application of VTAs and other hazardous substances.
Rationale for the condition	<p>This ensures that, where aerial application to dwellings, huts, access points, camping and public areas, walking and vehicle tracks, roads and lay-bys is permitted, it should take place in sufficient time to allow the clearance of these dwellings, huts, access points, camping and public areas, walking and vehicle tracks, roads and lay-bys before school or public holidays commence so as to minimise the risk of direct human (particularly child) contact with baits.</p> <p>When a second clearance is undertaken, it should be timed to take place after strong winds occur that may dislodge bait caught up in the forest canopy or, failing that, immediately before the weekend or public or school holidays.</p>
Modification options	<p>Use discretion to permit the aerial application of VTAs and other hazardous substance uses to some dwellings, huts, access points, camping and public areas, walking and vehicle tracks, roads and lay-bys, instead of excluding them under Condition 5, provided that bait is cleared as soon as possible. This would generally apply to low- or medium-use dwellings, huts, access points, camping and public areas, walking and vehicle tracks, roads and lay-bys.</p> <p>Use discretion in requiring a second clearance. The condition may not be required for low-use dwellings, huts, access points, camping and public areas, walking and vehicle tracks, roads and lay-bys but consider this on a case-by-case basis. Some cases may require consultation with the Department of Conservation and/or the relevant track manager(s).</p> <p>Timeframes for clearances should reflect both use (low, medium or high) and complexity (ie, terrain, length, safety considerations). All such matters inform a risk assessment, and applicable mitigating measures that reduce or remove the presence of exposure pathways.</p>
Example	Dwellings, huts, access points, camping and public areas, walking and vehicle tracks, roads and lay-bys that have a moderate degree of use, especially in weekends, should be listed for a second clearance of all remaining bait and/or carcasses.

CONDITION 7: GPS track logs

A GPS track log shall be recorded and maintained for each clearance and made available to (*insert the name of permission issuer*) within two weeks of the VTAs being applied.

Scope	For aerial application of VTAs and other hazardous substances.
Rationale for the condition	This provides a record of dwellings, huts, access points, camping and public areas, walking and vehicle tracks, roads and lay-bys that have been cleared and when.
Modification options	This condition may be applied in instances where the applicant is permitted to aerially apply VTAs and other hazardous substances to dwellings, huts, access points, camping and public areas, walking and vehicle tracks, roads and lay-bys.

Example	This condition is required for an operation that includes dwellings, huts, access points, camping and public areas, walking and vehicle tracks, roads and lay-bys that receive moderate use, to ensure that the operator keeps a formal record of the work that has been undertaken. It may be useful if a member of the public makes a complaint relating to bait found on or near dwellings, huts, access points, camping and public areas, walking and vehicle tracks, roads and lay-bys.
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Protection of drinking water supplies

CONDITION 8: Drinking water supply: protection of drinking water supplies

Sufficiently prior to, but within two months of, the operation, the applicant must identify appropriate mitigation measures to protect all water supplies (including domestic self-supplies) that draw water for human consumption from an abstraction point:

- within the operational area, or
- within 200 m for ground-based applications, and within 400 m for aerial applications, downstream of the operational area where the water source is a surface waterbody that flows through or rises within the operational area.

Within this same timeframe, the applicant must also notify the water supplier of these measures and take and record these measures.

Scope	All VTA and other hazardous substance uses.
Rationale for the condition	This ensures the applicant protects any drinking water supplies (including domestic self-supplies) affected by the proposed operation.
Commentary	<p>A drinking water supply may take water from sources such as streams, springs, rivers, creeks, boreholes and roof/rainwater collection systems.</p> <p>It is the VTA operator's responsibility to ensure appropriate mitigation measures are put in place to prevent contamination of drinking water supplies. They should also work with the water supplier to ensure the water supplier considers the proposed mitigation measures are satisfactory.</p> <p>VTA operators must comply with the following provisions of the HSNO Act.</p> <p>Every person who imports, possesses, or uses a hazardous substance or new organism shall ensure that (a) any adverse effect caused by an act or omission of that person in relation to that substance or organism on any other person or the environment is avoided, remedied, or mitigated; and (b) no action or omission by that person will contravene any requirement or control on that substance or organism imposed by this Act (section 13).</p> <p>Every person commits an offence against this Act who ... fails to comply with any EPA controls imposed by an approval relating to a hazardous substance granted under this Act [or] fails to comply with a condition on a permission granted under section 95A (section 109(1)(e) and (ea)).</p> <p>VTA operators must also comply with the Health and Safety at Work Act 2015, which states that the person in charge of a business or undertaking must still '... ensure, so far as is reasonably practicable, that the health and safety of other persons is not put at risk from work carried out as part of the conduct of the business or undertaking ...' (section 36).</p> <p>Appendix 5 provides guidance for VTA operators on potential mitigation measures to protect drinking water supplies.</p>
Modification options	<p>Condition may not be required: This condition is not required if the operation does not affect any water supply catchments.</p> <p>Exclusion distances: VTAs should not be applied within the following distances of abstraction points that are within the operational area.</p>

CONDITION 8: Drinking water supply: protection of drinking water supplies

Distance from abstraction point	Domestic supplies	Public supplies
Ground-based application	20 m (extending 50 m upstream for flowing surface watercourses)	50 m (extending 100 m upstream for flowing surface watercourses)
Aerial applications	50 m (extending 200 m upstream for flowing surface watercourses)	200 m (extending 400 m upstream for flowing surface watercourses)

In steep areas, the exclusion area may need to be increased to prevent bait from falling into the waterway. For other operations (eg, along farm streams), bait may be applied closer to the water edge as long as the bait can be applied in a way that prevents any from falling into the water (eg, using trickle feeding).

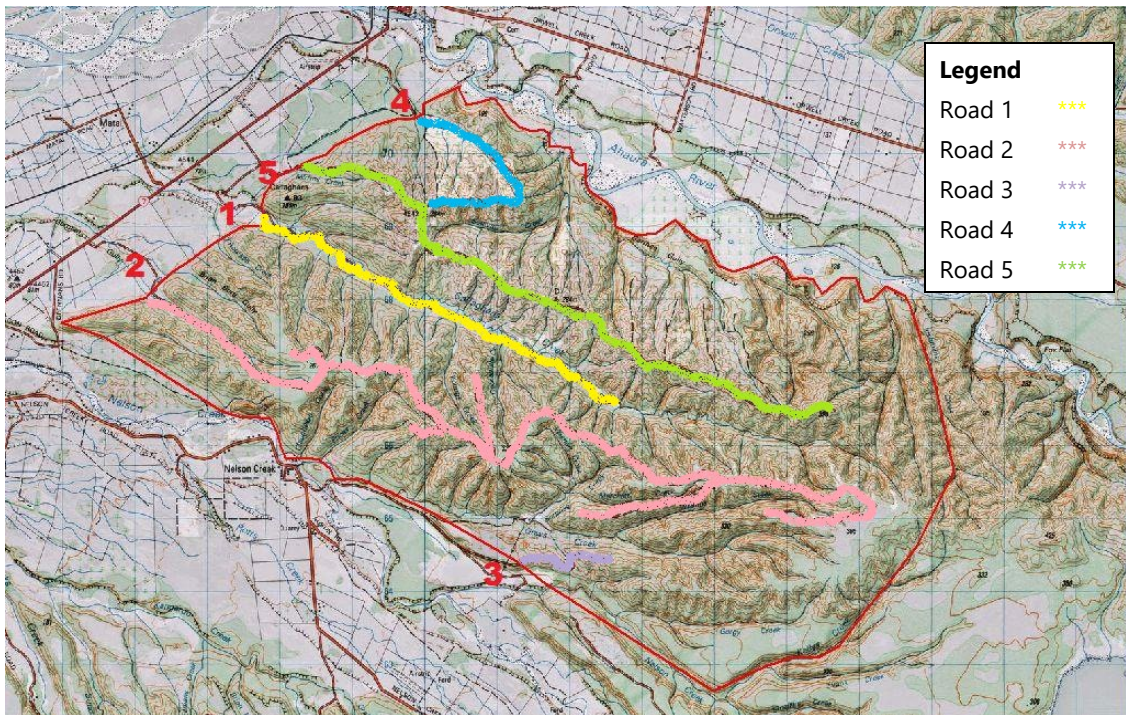
Where the risk of the VTA or poisoned carcasses entering into waterways is higher (eg, sloping ground toward the waterway; heavy vegetation overhanging the waterway), the exclusion distances may be increased. In flat areas with low possum numbers, the exclusion distance could be decreased, if this does not increase potential public health risks. This will depend on local conditions, including rainfall, the gradient of the terrain, vegetation and soil type.

Aerial applications of 1080: Following 1080 aerial operations, the operator is likely to test the water, if there are insufficient historical records demonstrating that the water supply will not be contaminated or to reassure the public that the contaminated water supply is safe. If undertaking water testing, the operator should follow the current 'Guideline for sampling and testing water associated with monitoring of aerial 1080 baiting operations' (Manaaki Whenua 2019).

The water supply is likely to be temporarily disconnected until such time as water testing finds no 1080 present above 50 percent of the provisional maximum acceptable value (PMAV) for 1080 in the *Drinking-water Standards for New Zealand* (Ministry of Health 2018). If no alternative water source is available, an adequate alternative potable water supply (to be used for drinking and cooking) is likely to be provided to affected households, until testing is completed.

When water testing reveals 1080 contamination over 50 percent of the PMAV, the alternative potable water supply should be maintained until testing confirms 1080 is below 50 percent of the PMAV.

Case study 1: Managing risk around roads and vehicle tracks



Scenario

An applicant wishes to aerially apply 1080 over 4,800 ha of the Ahaura Forest, an area comprising open beech forest and commercial forestry. The forest contains about 45 km of formed roads and vehicle tracks (roads 1–5 as marked on the map), to which there are five main access points.

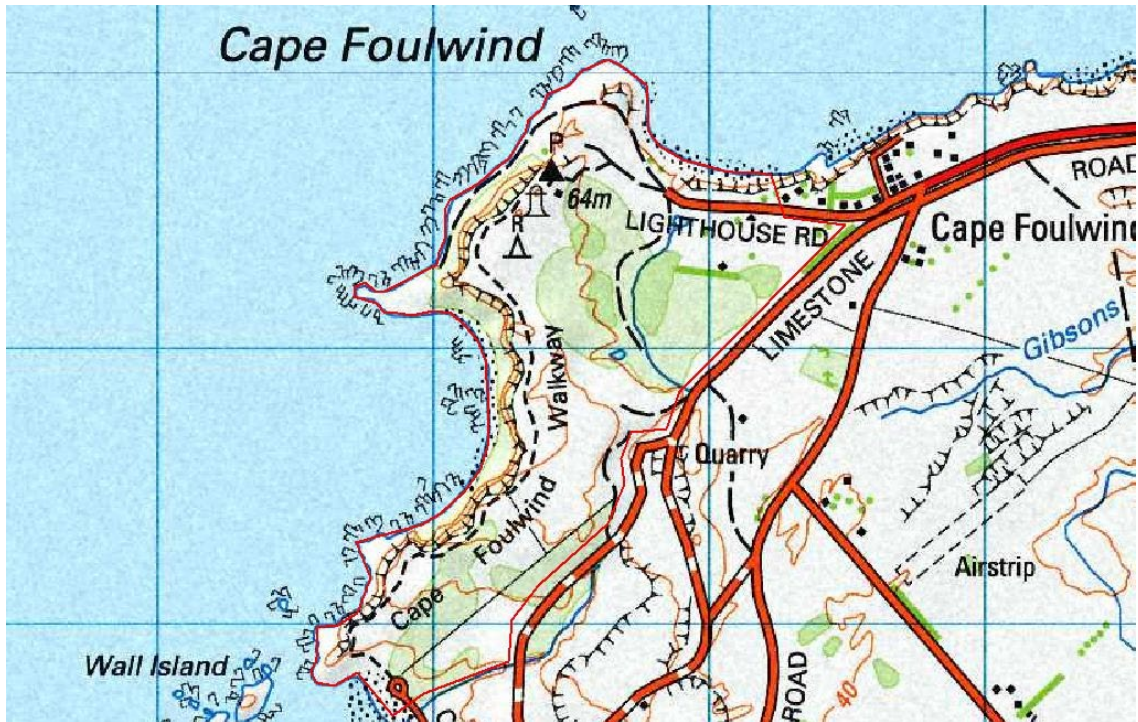
Checking with the relevant land manager, the applicant determines the following characteristics of the roads.

- Road 1 is a well-formed gravel road, providing river access that is popular with families. It has the highest level of public use (more than 20 people per day on average).
- Road 2 is a rough, seldom-used 4WD track, mostly through steep native bush. It is unusable in winter due to mud.
- Road 3 is a well-formed track and popular route for hunters accessing the native bush.
- Roads 4 and 5 are seldom-used commercial forestry tracks with lockable gates at their access points. The main use of these roads is at weekends when local families collect firewood.

The applicant clarifies that it is not practical to clear the 45 km of roads within 24 hours, that at most about 20 km could be cleared in this timeframe, and that there will be a significant loss of efficacy if exclusions are required on all roads.

Model Permit Condition	Applicable?	Modification
Conditions 1–5	✓	[Not covered in this example]
Areas where a risk to public health may be created		
Condition 6	✓	Baits may not be laid or applied within 20 m of either side of roads 1 and 3. Vehicle access to roads 4 and 5 will be prevented by locked gates and/or temporary barriers at all access points, where warning signs will advise access is prohibited. Starting within 24 hours of the toxic bait application, make reasonable efforts to find and remove all bait, and any animal carcasses found, within 20 m of either side of roads 1 and 3.
Condition 7	No	Not required
Protection of drinking water catchments		
Condition 8	No	The risk assessment found no drinking water supplies were in the operational area or within 400 m downstream of the operational area.

Case study 2: Managing high-risk exclusions



Scenario

An applicant proposes a hand-laid possum control operation, using sodium cyanide paste in the Cape Foulwind area.

The operational area is mostly rolling farmland but is traversed by the 4 km Cape Foulwind Walkway, which runs from the lighthouse at Cape Foulwind to the seal colony near Tauranga Bay. Car parks are located at each end of the walkway and the public use both Limestone and Lighthouse roads to access them.

The seal colony attracts an estimated 80,000 to 100,000 visitors every year. Many of these visitors walk all or part of the walkway, and many are tourists or families with young children. The walkway passes through rolling farmland, with coastal cliffs on the seaward side.

The track manager confirms that the walkway passes as close as 2–5 m to the edge of the coastal cliffs in places but that the cliffs are steep and inaccessible.

Model Permit Condition	Applicable?	Modification
Conditions 1–5	✓	[Not covered in this example]
Areas where a risk to public health may be created		
Condition 6	No	This condition is not applicable to ground-based operations
Condition 7	No	This condition is not applicable to ground-based operations
Protection of drinking water catchments		
Condition 8	No	The risk assessment found no drinking water supplies were in the operational area or within 400 m downstream of the operational area.

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Appendix 1: EPA approval codes for VTAs and other hazardous substances requiring health permissions

EPA approval codes for VTAs and other hazardous substances requiring health permissions

Sodium monofluoroacetate (1080) formulations	Approval code
Soluble concentrate containing 200 g sodium fluoroacetate/litre	HSR002427
Cereal-based pellets containing 1.5–2.0 g sodium fluoroacetate/kg	HSR002424
Fishmeal pellets containing 1.0 g sodium fluoroacetate/kg	HSR002423
Cereal-based pellets containing 0.4–0.8 g sodium fluoroacetate/kg	HSR002422
Fish paste containing 10 g sodium fluoroacetate/kg	HSR002425
Apple-based paste containing 1.5 g sodium fluoroacetate/kg	HSR002421
Peanut-based paste containing 1.5 g sodium fluoroacetate/kg	HRE000001
Apple-based paste containing 0.6–0.8 g sodium fluoroacetate/kg	HSR002420
Polymer gel containing 50 g sodium fluoroacetate/kg	HSR002418
Polymer gel containing 100 g sodium fluoroacetate/kg	HSR002426
Polymer gel block containing 1.5 g sodium fluoroacetate/kg	HSR002419
Cyanide formulations	
Bait containing 0.55–1.84% w/w encapsulated potassium cyanide (Reassessed – HRC08001)	HSR007628
Encapsulated paste containing 500 g/kg potassium cyanide (Reassessed – HRC08001)	HSR001607
Encapsulated pellet containing 800 g/kg potassium cyanide (Reassessed – HRC08001) (not currently being manufactured)	HSR001608
Feratox 475 g/kg (Reassessed – HRC08001)	HSR001673
Paste containing 500–600 g/kg sodium cyanide (Reassessed – HRC08001)	HSR001606
Feratox pellets containing encapsulated potassium cyanide at 0.5–2.3% in Ferafeed paste	HSR100752

Yellow phosphorus		Approval code
Paste containing 4.5–5 g/kg yellow phosphorus (Reassessed – HRC08001)		HSR001610
Paste containing 9.5–10 g/kg yellow phosphorus (Reassessed – HRC08001)		HSR001609
3-chloro-p-toluidine hydrochloride (DRC 1339)		
Powder containing 970–980 g/kg 3-chloro-p-toluidine hydrochloride (Reassessed – HRC08001)		HSR001611
Microencapsulated zinc phosphide (MZP) paste		
MZP paste containing 15 g/kg zinc phosphide		HSR100557
Ant baits		
Advion Fire ant bait containing indoxacarb		HSR007905
Amdro Fire ant bait containing hydramethylnon		HSR007882
Campaign ant bait containing hydramethylnon		HSR007881

Appendix 2: Notes to assist in the risk assessment

Methods of application

There are a number of methods of applying VTAs and other hazardous substances, each with different associated hazards. The method used must be appropriate to the terrain in question and allow the operator certainty around the accuracy of bait placement. The concentration of the VTA or other hazardous substance being used can vary significantly depending on the application method, the target species and the environment.

In certain circumstances, an operator may use a combination of ground-based and aerial applications. For example, an operation might involve aerial 1080 application for a wide area as well as ground-based application along the periphery to allow for control of possums in areas that abut a residential area and that require more accurate bait placement.

Table A.1: Overview of VTA and other hazardous substance application methods

Application method	Substance(s)	Bait placement and coverage
Aerial broadcast	1080	Potential for bait to be placed inaccurately. Bait is generally well spread, particularly if a low-sow bucket is used.
Aerial trickle	1080	More accurate placement than aerial broadcast; bait is generally well spaced.
Aerial cluster	1080	Relatively accurate placement; however, there is a large cluster of bait, so exposure is to many pellets rather than spaced single pellets.
Open ground application: turf spits, hand broadcast, ground-laid paste	1080, cyanide, yellow phosphorus, DRC 1339	Accurate placement. Coverage rates vary depending on terrain, target species and VTA.
Hand-based application from an aircraft	DRC 1339	Accurate placement. Coverage rates vary depending on terrain and target species.
Bait stations	1080, cyanide	Placement divided into less or more than 1 m above the ground. Coverage rates vary depending on terrain, target species and VTA.

Application method	Substance(s)	Bait placement and coverage
Hand-based application; restricted to use within specified types of bait stations	MZP paste	Accurate placement. Coverage rates vary depending on terrain and target species.
Aerial application	Amdro®	Accurate placement. A maximum rate of 2.5 kg/ha, twice per year in any application area is set for this substance.
Aerial application	Campaign®	Accurate placement. A maximum rate of 2.5 kg/ha, twice per year in any application area is set for this substance.
Aerial application	Advion®	Accurate placement. A maximum rate of 2 kg/ha, twice per year in any application area is set for this substance.

Aerial application

As noted in Table A.1, 1080 is the only VTA that requires a permission to be aerially applied, as it is used for pest control in remote areas where ground-based application would be difficult or impossible. The various application methods are:

- pellets or carrot bait broadcast from a hopper underneath the aircraft with approximately 120 m swathe, 2–6 kg/ha sowing rate for possums (greater amount may be used for rabbits)
- pellets or carrot bait trickle-fed from a hopper underneath the aircraft ('clustering' of bait is also sometimes used)
- pellets hand-dropped from the aircraft (rarely used).

The EPA reassessment decision notes that only the following formulated substances are approved for aerial application:

- cereal-based pellets containing 0.4–0.8 g 1080/kg
- cereal-based pellets containing 1.5–2.0 g 1080/kg
- soluble concentrate containing 200 g 1080/L (only when applied to food baits as per controls).

Aerial drops may release 1080 into areas outside the planned operational area through overflying (release outside the area due to error or mechanical problems), bait drift or accidental release. Operators are required to use GPS logs to confine aerial applications of 1080 to operational areas and to ensure that the application preserves exclusion zones around homes, roads and tracks, schools and drinking water supplies.

The three ant baits, Campaign®, Amdro® and Advion®, can only be aerially applied if the operator has permission – see Table A.1 for further information.

Ground-based application

Ground-based application of VTAs allows for more accurate bait placement; however, it is limited in terms of the area that it can cover. Methods of ground-laying 1080, cyanide, yellow phosphorus, DRC 1339, MZP and ant baits are to use:

- bait stations
- bait bags
- ground distribution (hand broadcast) of bait
- gels or pastes in earth 'spits'
- small dollops of paste or gel on trees and fence posts, often marked with white flour.

It is important to check the formulation to see which application methods are allowed because some are allowed to be used only in contained ground-based applications.

Bait presentation

There are various ways of presenting bait that aim to make the bait as attractive and as accessible as possible to the target species, while reducing the risk to other species, including humans.

1080 is incorporated into a number of different baits at varying concentrations, depending on the target species, the method of application and the type of bait least likely to attract non-target species. The EPA, in its reassessment of the use of 1080, noted that public hazards from various forms of exposure to 1080 are relatively minor. It stated that the greatest hazard relates to unsupervised children finding and eating bait (EPA 2007a).

1080 is also available as a soluble concentrate that may be coated on carrot or apple pieces, mixed with cereal to form hard pellets or made into paste or gel formulations. Carrot bait for aerial distribution is chopped and screened to remove small pieces in order to reduce the risk of poisoning non-target birds. Cereal pellet bait is used for both aerial and bait station control. Paste bait is used for ground-based follow-up maintenance control. A masking agent from the range available, such as cinnamon or orange oil, is added to bait to mask the taste of 1080. Cinnamon is thought to be a partial deterrent to birds and insects; green dye is added to further deter birds.

Cyanide is presented as pea-sized pieces of paste placed with a little flour and icing sugar or another lure such as cinnamon or eucalyptus oil on a rock, leaf or stick. Feratox® (a pea-sized encapsulated cyanide pellet) was developed to increase the effectiveness of cyanide and reduce the risk of operators being exposed to hydrogen cyanide vapours. The pellets are placed in a bait station either with similar-sized cereal feed pellets or in a peanut-butter paste.

Yellow phosphorus comes in a paste form and is generally applied to turf spits on the ground for rabbit control or in similar ways to cyanide paste for possum control. These two forms of application may be more hazardous in easily accessible areas.

DRC 1339 is most commonly presented as laced bread bait for ground-feeding flocks or as gel bait that operators, lowered by helicopter, drop into nests in tall trees.

MZP paste is presented as a ready-to-use paste bait containing 15g/kg zinc phosphide for direct consumption by target pests. The paste is placed in standard reusable plastic bait stations or specific types of disposable bait stations, such as bio-bags (labelled paper bags), Strikers (starch bait station) or Defender bait station (labelled cardboard boxes).

Campaign® and Amdro® are granular ant baits containing 7.3 g/kg of the active ingredient hydramethylnon while Advion® is an ant bait containing 0.45g/kg of the active ingredient indoxacarb in the form of a granule. The substances are applied by aerial or ground-based dispersal where an ant infestation occurs. They are also used to treat individual nests and as a maintenance treatment in designated zones around previously identified and detected colonies. Ants carry the bait back to the nest and pass it on to the queen and other ants.

Terrain and vegetation variables

The terrain and vegetation in an operational area can affect the public health risks of a pest control operation. They should be considered when assessing the suitability of the Model Permit Conditions and how they may need to be modified (see Table A.2).

Table A.2: Overview of terrain and vegetation variables

Terrain type	Comments related to risk characteristics
Open terrain, flat to gentle contour	Relatively easy for the public to access, particularly if close to residential areas. Bait visible from long distances, regardless of method of application. Unless access is physically limited (eg, by fences, ditches, walls), use may present a relatively greater public health risk.
Medium terrain (gentle rolling to hilly contour)	More difficult to access, and terrain and vegetation cover of this type may present a barrier to younger children (depending on proximity to residential areas).
Rough, steep contour	This type of terrain may act as a physical barrier, preventing ready access to bait in an operational area. Some areas of rough terrain will include vehicle or walking tracks that may provide access to otherwise inhospitable landscapes – see Model Permit Conditions 9–11.
Vegetation type	Comments related to risk characteristics.
Light to no vegetation, eg, pastureland, open grassland, sparse tree cover	Bait visible from relatively long distances. Vegetation does not provide a barrier to accessing the bait.
Medium vegetation coverage (eg, fodder crops, open bush, tussock)	Vegetation cover may limit visibility of bait on the ground or in bait stations and may present a moderate physical barrier to access, particularly for young children.

Terrain type	Comments related to risk characteristics
Heavy vegetation (thick bush, extensive undergrowth)	Vegetation cover significantly limits visibility and presents a physical barrier to accessing the operational area. Note: In some areas, tracks may provide access to otherwise heavily forested or covered areas. Model Permit Conditions 9–11 provide for controls in these circumstances.

Potentially exposed population

The potentially exposed population will differ for each operation. However, examples of populations that may often be exposed include (but are not limited to):

- local residents or visitors (noting that children may wander or explore more extensively than adults in areas adjoining residential areas or homes)
- trampers or day walkers using bush tracks and huts
- hunters
- farming families on the edges of operational areas
- school groups using operational areas
- watercraft users using landing sites within operational areas
- any other individuals or groups that use the operational areas for recreation (eg, cyclists, mountain bikers, trail motorbike riders).

Public use patterns must be taken into account, in particular when considering the application and/or modification of, for example, Model Permit Condition 9. Table A.3 sets out some examples of public use patterns that may influence the use of Model Permit Conditions. Please note these are examples only and will be influenced by other factors such as seasonal use patterns, events that bring large groups into an area for a short time, and the characteristics of the local and likely visiting populations.

Table A.3: Overview of terrain and vegetation variables

Intensity of public use	Comments related to risk characteristics
High public use (eg, more than 50 people per day)	Higher public use may increase the risk of contact with baits due to the large number of people in the area. Some areas may experience intermittent periods of high use around holidays, long weekends or hunting seasons. In some areas, use will be concentrated or confined to specific parts of a proposed operational area.
Medium public use (eg, 20–50 people per day)	There may be some risk of contact with bait due to the number of people, particularly if users include children or, for example, non-English speakers who may not fully understand warning signs.
Low public use (eg, fewer than 20 people per day)	A lower concentration of users may lower the risk of contact with bait. However, the types of users must still be considered; small groups or individuals may still be at risk, particularly children.

Appendix 3: Example checklist for assessing applications

Use this checklist in conjunction with the application form.

Applicant:

Date received:

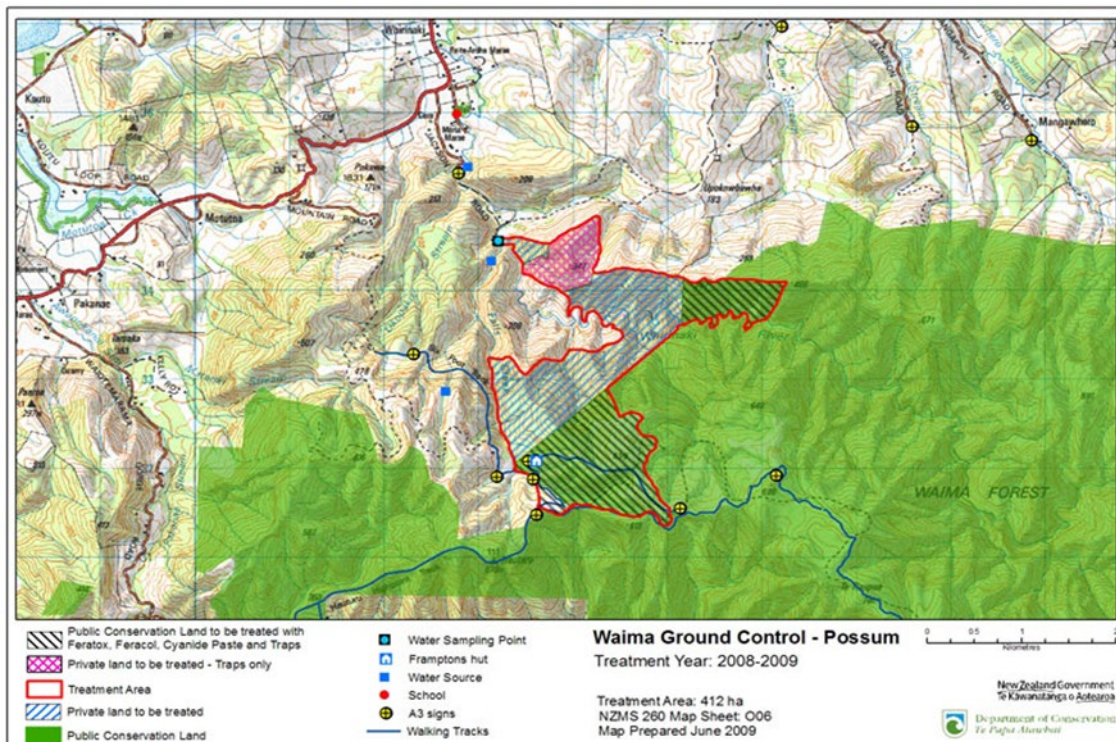
Operation:

Start date:

Finish date:

- Information on application complete (must be signed, have all sections completed and seek an appropriate permission timeframe)
- Operation area clearly defined by map and description
- Operational description satisfactory
- Operator identified
- Risk assessment information adequate
- All landowners' names, addresses and phone numbers provided
 - Indication that permission has been given
- Exclusion areas and boundaries adequately described
- Tracks identified in application and marked on map
- Houses, huts, public roads in operational area identified
- Water supplies identified (domestic and public/networked)

Appendix 4: Example of an appropriate operational map



Appendix 5: Protection of drinking water – guidance

The following information provides guidance to VTA operators and drinking water suppliers to consider with a view to adopting relevant measures from it as good practice to protect drinking water. When any parts of this guidance are included as conditions in the permission, they are mandatory.

Definitions

An **abstraction point** is the location at which source water is abstracted for use in a drinking water supply (for example, the location at which water is abstracted from a river, stream, lake or aquifer).

A **domestic self-supply** is a standalone home that has its own supply of drinking water.

A **source**, **source water** and **source of a drinking water supply** all mean the water body from which water is abstracted for use in a drinking water supply (for example, a river, stream, lake or aquifer) and rainwater. Flowing surface watercourses include rivers, streams and creeks.

The **provisional maximum acceptable value (PMAV)** in the *Drinking-water Standards for New Zealand* (Ministry of Health 2018) represents the concentration of sodium fluoroacetate (1080) in water that is not considered to cause any significant risk to the health of the consumer over their lifetime of consumption of that water. Fifty percent of the PMAV is a 1080 concentration of 1.75 parts per billion. To access the *Drinking-water Standards for New Zealand*, go to <https://www.taumataarowai.govt.nz/for-water-suppliers/current-drinking-water-standards/>

Notification

VTA operators should consider notifying relevant people (households and/or community drinking water supply operators) who draw water from within or near operational areas, so that they are aware of the proposed operation.

VTA operators should consider notifying the intended operation to everyone who sources their household or community water supply from a water abstraction point:

- within the operational area, or
- within 200 m downstream of the operational area for ground-based applications where the water source is a surface waterway that flows through or rises within the operational area, or
- within 400 m downstream of the operational area for aerial applications where the water source is a surface waterway that flows through or rises within the operational area.

The notice may be given sufficiently prior to, but within two months of, the proposed operation. If requested by the person notified, notification may be repeated closer to the start of the proposed operation.

Location

VTA operators will need to locate abstraction points within and near the operational area to be able to apply any mitigation measures to at-risk water intakes. Individual households and/or community drinking water supply operators can help the VTA operators to verify the location of abstraction points:

- within the operational area, or
- within 200 m downstream of the operational area for ground applications where the water source is a surface waterway that flows through or rises within the operational area, or
- within 400 m downstream of the operational area for aerial applications where the water source is a surface waterway that flows through or rises within the operational area.

It is useful to record the GPS waypoint file of water supply intakes so that this information can be made available to enforcement agencies on request.

Exclusions

VTA operators should ensure that VTAs cannot enter drinking water supplies.

Where abstraction points are within the operational area, no VTAs should be ground-laid or aerially applied within the distances from abstraction points set out in Table A.4.

Table A.4: Minimum distances from abstraction points for applying VTAs

Distance from abstraction point	Domestic supplies	Public supplies
Ground-based application	20 m (extending 50 m upstream for flowing surface watercourses)	50 m (extending 100 m upstream for flowing surface watercourses)
Aerial applications	50 m (extending 200 m upstream for flowing surface watercourses)	200 m (extending 400 m upstream for flowing surface watercourses)

In steep areas, the exclusion area may need to be increased to prevent bait from falling into the waterway. For other operations (eg, along farm streams), bait may be applied closer to the water edge as long as the bait can be applied in such a way as to prevent any from falling into the water (eg, using trickle feeding).

Where the risk of the VTA or poisoned carcasses entering into waterways is higher (eg, sloping ground toward the waterway; heavy vegetation overhanging the waterway), the exclusion distances may be increased. In flat areas with low possum numbers, the exclusion distance could be decreased, if this does not increase potential public health risks. This will depend on local conditions, including rainfall, the gradient of the terrain, vegetation and soil type.

Additional measures for aerial 1080 applications

Following 1080 aerial operations, the VTA operator is likely to test the water if there are insufficient historical records demonstrating that the water supply will not be contaminated, or to reassure the public that the water supply is safe.

If undertaking water testing, the VTA operator should follow the current 'Guideline for sampling and testing water associated with monitoring of aerial 1080 baiting operations' (Manaaki Whenua 2019).

When water testing is undertaken, the water supply should be temporarily disconnected until such time as water testing finds no 1080 present above 50 percent of the PMAV for 1080 in the *Drinking-water Standards for New Zealand* (Ministry of Health 2018; see <https://www.taumataarowai.govt.nz/for-water-suppliers/current-drinking-water-standards/>). If no alternative water source is available, an adequate alternative potable water supply (to be used for drinking and cooking) should be provided to affected households until testing is completed.

When water testing reveals 1080 contamination is over 50 percent of the PMAV, the alternative potable water supply should be maintained until testing confirms 1080 is below 50 percent of the PMAV.