Regional best practice guide for the management of wastewater overflows

Prepared by 4Sight Consulting for the
Regional Wastewater Management Group

November 2019

Taonga o te Whenua KAWERAU TREASURE OF THE LAND DISTRICT COUNCIL

Ōpōtiki District Council STRONG COMMUNITY STRONG FUTURE

ROTORUA LAKES COUNCIL Te kaunihera o ngā roto o Rotorua

TOI TE ORA PUBLIC HEALTH Bay of Plenty + Lakes Districts

Tauranga City

WHAKATĀNE District Council Kia Whakatāne au i ahau

Western Bay of Plenty District Council

BAY OF PLENTY REGIONAL COUNCIL TOI MOANA

REGIONAL BEST PRACTICE GUIDE FOR THE MANAGEMENT OF WASTEWATER OVERFLOWS

Regional Wastewater Management Group

Version 1.0
November 2019

Acknowledgements

Prior to the development of the Regional Best Practice Guide for the Management of Wastewater Overflows (the Guide), 4Sight Consulting Limited (4Sight) completed a desktop review of available documents to identify examples of current practice. The following two documents offered the best approach and content on which to base the development of a guide for the Bay of Plenty:

- *Dry Weather Sewer Overflows Best Management Practice Guideline* (June 2006); and
- *Wastewater Overflow Regional Response Manual* (May 2013).

To ensure best value and a fit for purpose guide for the Bay of Plenty region, the Guide has been based on the two documents above and customised as appropriate for the region. 4Sight acknowledges Watercare Service Ltd and Auckland Council as owners of the above documents and appreciates them permitting the use of content.

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Contents

1 Introduction

1.1 Background

The Bay of Plenty Regional Wastewater Management Group (the Group) was established in 2013 to provide a forum to discuss technical and management solutions to reduce the incidence of wastewater overflows across the region. The Group includes representation from Bay of Plenty Regional Council (BOPRC), Toi Te Ora Public Health Service (Toi Te Ora) and Territorial Authorities that operate wastewater networks within the Bay of Plenty region (collectively referred to as Network Operators), including:

- Tauranga City Council;
- Western Bay of Plenty District Council;
- Whakatane District Council;
- Rotorua Lakes Council;
- Opotiki District Council; and
- Kawerau District Council.

Discussion within the Group has highlighted some inconsistencies in overflow management across the region and it was agreed that the Guide would be developed to address this.

1.2 Purpose

The purpose of the Guide is to provide an agreed standardised framework and key performance targets for the response, monitoring and reporting of wastewater overflows by Network Operators and contracted service providers across the region

1.3 Scope

The Guide will cover best practice response, monitoring and reporting for both *dry weather* and *wet weather overflows* associated with the public reticulated wastewater network across the Bay of Plenty region. The Guide will cover the management of *overflows to land* and *overflows to water*.

The Guide does not cover private wastewater system or treatment plant overflows.

It is noted that in some networks overflows can occur as a result of a lack of pipe or network capacity. However, capacity is not generally an issue in the Bay of Plenty region and is therefore outside of the scope of the Guide.

Catastrophic overflow events constituting a Civil Defence State of Emergency are outside the scope of this Guide.

1.4 Structure of the guide

The Guide is made up of the following sections.

Section	Covers
1 - Introduction	Introduces the Guide including background, purpose, scope and structure.
2 – Overflows in the Bay of Plenty	Briefly covers the causes and effects of wastewater overflows in the region.
3 – Key overflow management roles in the region	Describes the key roles in wastewater overflow response.
4 – Key definitions	Provides a definition of key terms used in the Guide.
5 – Overflow response	Sets out the best practice requirements for responding to wastewater overflows in the Bay of Plenty Region. Response requirements are separated into the following key steps and these form the structure of the response section: ▪ Assess: ▫ On-site health and safety ▫ On-site assessment of incident and request for additional resources ▫ Assess risk ▫ Signage and perimeter controls in place ▪ Respond: ▫ Notify to involve other parties ▫ Install containment ▫ Repair ▫ Clean up
6 – Environmental monitoring	Provides an overview of monitoring requirements (with more specific requirements in Appendix A).
7 – Key performance targets	Provides the key performance targets for responding to overflows in terms of timeframes and results.
8 – Close out and reporting	Covers when close out can occur, roles, key process steps and requirements.
9 – Auditing and updates to Network Operator Procedures	Covers the need for Network Operators to audit their response against the requirements of the Guide.
Appendices	Process overview diagram, supporting information, incident response reporting form and templates.

1.5 Process overview diagram

While the full Guide should be regularly reviewed and referred to, those very familiar with its requirements can refer to the *Process Overview Diagram* in Appendix B. The *Process Overview Diagram* is intended to capture critical steps and key information to prompt appropriate action. It is suggested that the *Process Overview Diagram* be laminated and kept in response vehicles for quick reference.

1.6 Guide status and reviews

The Guide is a living document that will require review over time to ensure it continues to meet its intended purpose and is consistent with developments in practice.

It is recommended that the Guide is reviewed after 2 years of implementation, and then every five years thereafter (or sooner if needed). The review should be carried out by the Group and any required updates to the Guide made within six months of the completion of the review. Proposed updates will be circulated to the Group for approval prior to being formally adopted.

2 Overflows in the Bay of Plenty

Early wastewater systems took wastewater out of houses and typically discharged into the outgoing tide to be flushed out to sea. Around this time, civic authorities focused on basic sanitation needs to reduce disease. Having met these basic sanitation needs in the early 1900's, attention turned to the growing community expectations of the quality of our beaches, harbours and streams. This in turn led to more extensive wastewater systems and the more sophisticated treatment that we know today.

Despite this improvement, our wastewater networks are not problem-free and from time to time overflows occur.

Overflows are either a result of overloading of the wastewater system with stormwater during rainfall from inflow and infiltration (*wet weather overflows*) or during dry weather as a result of a partial or full blockage of the pipe system (*dry weather overflows*).

Wet weather overflows are typically caused by illegal roof pipe connections, low gully traps or weak points in the pipe network. The majority of *dry weather overflows* in the region are due to blockages. Blockages occur as a result of pipe failure, or from tree roots, fats, or items such as sanitary wipes entering the system down sinks and toilets. *Dry weather overflows* can also occur as a result of a lack of pipe capacity to cater for normal flows. However, this situation is not known to occur in the Bay of Plenty at this time.

Characteristics of overflows strongly reflect the characteristics of the contributing catchment. In this respect, the contaminants in wastewater from a residential catchment will differ from those in wastewater from an industrial catchment. Typically, raw wastewater overflows will contain a mixture of:

- Organic matter (faecal matter, vegetation, paper, etc);
- Nutrients (primarily nitrogen and phosphorus);
- Microbiological pathogens (numerous pathogens can be present in human wastewater);
- Solids (faecal solids, paper, plastics etc.); and
- Variable levels of contaminants such as heavy metals and organic chemicals, typically from tradewaste.

Dry weather overflows will consist of a relatively undiluted combination of the above, while *wet weather overflows* will be diluted to some extent by the rainfall inflow and infiltration contributing to them.

The volume of an overflow will be determined by the rate and duration of the discharge. Overflows from larger wastewater networks will typically have higher rates of discharge, reflecting the size of the contributing catchment. Wastewater flows typically display morning and evening peaks, so time of day can also affect volume.

Wastewater overflows end up at our beaches and in our harbours and streams where the main adverse effect is generally the risk posed to public health as a result of pathogens (bacteria, viruses, microorganisms, etc.) carried in the wastewater.

In addition to the public health risk, overflows can result in long and short-term effects on the natural environment. Long-term effects brought about by frequent wastewater overflows include elevated nutrient levels often leading to undesirable algae growth and reduced water quality. Short-term effects mainly occur during *dry weather overflows* where the organic content of the relatively undiluted wastewater can result in de-oxygenation of watercourses, particularly during times of low flow when available dilution in the receiving environment is at its lowest. Reduced oxygen levels may also occur in estuarine areas, but this effect is likely to be rare and of short duration given the high dilution that is available in the coastal environment and regular tidal exchange. During *wet weather overflow* events, the wastewater component is typically diluted by large stormwater flows and as a result, de-oxygenation effects are less likely to occur.

In addition to physical effects on receiving environments and public health, wastewater overflows can have a social impact by reducing aesthetic values due to the presence of faecal material and hygiene products.

Overflows can also have significant cultural impacts due to the discharge of untreated wastewater to aquatic environments and impacts to the mauri (life force) of the waterbody

3 Key overflow management roles

A number of parties will be involved in responding to wastewater overflows in the region. Key parties are described in Table 1.

Table 1 Roles of key parties involved in overflow management in the Bay of Plenty

Role title	Description
Network Operator	Territorial Authority responsible for operating the applicable wastewater network. Network Operators have primary responsibility for ensuring wastewater overflows are managed appropriately and that the required parties are notified as described in Section 5.5.
Network Operator call centre	Call centre of the Bay of Plenty Territorial Authority responsible for operating the applicable wastewater network.
Network Operator service provider	Contractor/party with the responsibility for overflow incident response.
Network Operator service provider base	Work/depot/office base for the contractor/party with the responsibility for overflow incident response.
Network Operator Incident Controller/Contractor	Network Operator staff member appointed by the Network Operator for oversight of high risk incidents, as described in 5.3.1. The Incident Controller may be fulfilled by appropriately skilled and experienced staff such as Network Engineers or Pollution Response staff. The Incident Controller is dedicated to the overall control and management of the response. The responsibilities of the Incident Controller are further described in Section 5.3.1.
Site personnel	Staff/crew attending the site as part of the overflow incident response.
Environmental Health Officer	Environmental Health Officer of the Bay of Plenty Territorial Authority responsible for operating the applicable wastewater network.
BOPRC Call Centre/Pollution Hotline	Bay of Plenty Regional Council 24-hour pollution response hotline, or the general call centre, which will refer pollution incidents through to the pollution hotline. Expert technical advice and support will be provided by the Pollution Response Team as required.
BOPRC Regulatory Compliance	BOPRC Regulatory Compliance staff will provide regional compliance advice and undertake enforcement as required.
Toi Te Ora	Public health unit for the Bay of Plenty and Lakes District Health Boards. Toi Te Ora are responsible for providing public health advice to the response as needed. Toi Te Ora will be notified of incidents by the relevant Network Operator as described in Section 5.5 but will not have a hands-on role in the incident response unless exceptional circumstances require it.

4 Key definitions

4.1 Definition of dry and wet weather overflows

Dry weather overflows can be described as overflows caused by partial or full blockage of the pipe system typically from pipe failure, or from tree roots, fats, or items such as sanitary wipes being flushed down toilets.

Wet weather overflows can be described as overflows occurring as a result of overloading the wastewater system with stormwater during rainfall from inflow and infiltration. This overloading can occur due to illegal connections of roof downpipes, low gully traps or weak points in the pipe network.

4.2 Definition of overflow to land and to water

Overflows to water can be described as overflows to streams, wetlands, ponds/lakes, groundwater aquifers, beaches, open coasts, harbours and estuaries, or to areas from which the overflow could enter these waterbodies i.e. stormwater network or land adjacent to a waterbody.

Overflows to land can be described as overflows that do not enter or have the potential to enter water.

4.3 Definition of best endeavours approach

Reference is made in this Guide to a *best endeavours* approach to aspects of wastewater overflow response. For the purpose of this Guide, a *best endeavours* approach means that a Network Operator will do what is reasonable and practicable in the circumstances, having regard to factors such as:

- Health and safety;
- Available resources;
- The physical site;
- Access;
- The extent of contamination;
- The nature of the waterbody; and
- The nature of the overflow.

While there are a number of detailed procedures within the Guide, there will often be practical limitations to what can be done when responding to different scenarios. It is recognised that there are a range of factors that need to be considered and balanced when responding to an overflow and it may not always be practical to strictly follow the Guide.

4.4 Definition of public land

Public land is defined as any land that is not privately owned.

4.5 Definition of exposure

Exposure is defined as coming into contact with wastewater contaminants. Exposure can occur in a number of ways including:

- Oral Ingestion: potentially via pathways such as swallowing liquid or food that is contaminated with wastewater;
- Inhalation: breathing contaminated aerosols or inhalation of gases;
- Absorption: via skin or eye, ear, nose and throat linings; and

- Injection: direct passage of pathogens via cuts or other hazards in wastewater (e.g. needles).

Generally, the more people coming into contact with contaminants increases the level of risk, and the likelihood that one or more of those people may be more susceptible to illness than others.

4.6 Definition of contact recreation area

A *contact recreation area* is an area where recreational activities occur that bring people physically in contact with water, involving a risk of involuntary ingestion or inhalation of water[1].

4.7 Definition of washdown and flushing

Washdown is defined as the washing off of land areas and would typically involve capturing the water used for washdown and associated wastewater for disposal.

Flushing occurs in a waterway and is used to displace contaminants by flushing them through the system, either the stormwater system or waterway, with clean, often reticulated water.

5 Overflow response

Initial information gathering for overflow events immediately following their notification to Network Operators is usually conducted by the Network Operator call centre. This process is generally well established across the majority of Network Operators in the region and is not covered in detail in this Guide; however, a suggested procedure is included in Appendix C of this Guide for Network Operators who require some guidance on this process.

The following sections set out the best practice requirements for on-site response to wastewater overflows in the Bay of Plenty region (once the overflow has been called in and logged in the system by the Network Operator call centre). Response requirements are separated into the following key steps and these form the structure of the response section:

Assess:

- On-site health and safety
- On-site assessment of incident and request for additional resources
- Assess risk
- Signage and perimeter controls in place

Respond:

- Notify other parties
- Install containment
- Repair
- Clean up

An overview of these key steps is provided in Figure 1 at the end of the response section.

[1] MfE, 2003. Microbiological Water Quality Guidelines for Marine and Freshwater Recreational Areas.

The following response sections assign responsibilities to a number of key parties and these roles are defined in Table 1, Section 3 of this Guide. Overall responsibility for overflow response sits with the relevant Network Operator.

Key performance targets for overflow response are provided in Section 7 of this Guide.

5.1 On-site health and safety

All those responding to wastewater overflows on site can be exposed to a range of health and safety hazards, including members of the public who come into contact with wastewater contamination or with the response effort. Protecting health and safety must be the first priority during any overflow response.

The main health hazards associated with wastewater overflows relate to contact with potential pathogens. In some situations; however, hazardous chemicals associated with trade waste discharges or the build-up of gases may present additional health risks.

Workers involved in overflow response also face a wide variety of safety hazards on the job. The risk posed by these hazards may be increased due to the location or timing of the wastewater overflow. This Guide assumes that **all parties attending wastewater overflow incidents will be appropriately trained and have detailed site health and safety plans** in place to manage hazards associated with responding to wastewater overflows. No action should be taken that endangers workers or the public.

On arrival at the site, and before proceeding further, **all site personnel must identify and consider all potential health and safety hazards and establish whether the site is safe to enter**. Key considerations include:

- Is visibility acceptable?
- Is the stream at high flow?
- Is confined space entry necessary?
- Is there an escape route?
- Is there a tripping hazard?
- Is traffic control required?
- Is access limited or difficult (e.g. due to steep terrain or vegetation)?
- Is cell phone/radio coverage available?
- Could the discharge contain hazardous substances?

Access to the site should not be attempted if the site is not safe or if it cannot be made safe.

5.2 On-site assessment

The on-site assessment should be conducted by the Network Operator service provider response crew in accordance with the following. The on-site assessment process is intended to comprise a relatively quick appraisal of the situation and should be completed within a short time of arriving on the site.

The on-site assessment process will involve the Network Operator service provider completing the following series of steps, on arrival at the site. All information should be recorded and provided to the Network Operator on request.

- Implement health and safety requirements as described in Section 5.1.
- Sight the point of discharge (if possible).
- Assess whether the site presents health and safety risks to the public – i.e. can the public come into contact with wastewater or contaminated land, or with any machinery or equipment that may be required for the response?
- Identify the general area affected and the nature of the incident – is the overflow entirely on land or has contamination of a waterbody occurred, or is there a risk that it could? Is the overflow on *public land*?
- If the overflow is still occurring, what is the approximate rate of the overflow?
- If the overflow has entered, or could enter a waterbody, what is downstream? For example, if there is a bathing beach or stream swimming hole that could also become contaminated?
- If the overflow has entered, or could enter a waterbody, what is the approximate flow rate within the waterbody?
- Is the overflow liquid only?
- Assess the likely cause of the overflow and anticipated time to repair.
- Assess the resources required to respond to the incident.

On completion of the on-site assessment the primary response crew should call back to the Network Operator call centre to confirm the nature of the incident.

The primary response crew will also confirm with the Network Operator service provider base the nature of the incident and the resources required for the response.

5.3 Risk assessment

The risk level of an incident is assigned based on the risk to public health and to the environment receiving the overflow. Assessing the risk level of a wastewater overflow once details have been confirmed on-site determines whether other organisations must be notified and whether a dedicated Incident Controller should be appointed to oversee the response. The risk level will also determine whether environmental monitoring is required. Risk levels are described in Table 2.

Table 2 Incident risk levels

Risk level	Exposure / public health risk	Receiving environment	Example
Low	No risk of exposure or ingestion	Private land or remote land where there is limited public access	Overflow to private land / no public health risk
Medium	Limited risk of exposure or ingestion	Public land or land where may enter water due to proximity or heavy rain forecast - i.e. via entry to stormwater system	Overflow to public land / land where overflow may enter water / low public health risk
High	Risk of exposure or ingestion / contact recreation area or seafood gathering area	Water – i.e. stream, wetland, river, lake, sea	Overflow to water / large overflow to public land / public health risk

**Note the risk rating is the higher level of risk of the exposure / public health risk and the receiving environment assessment. I.e. if the overflow is to land (low (green) receiving environment risk) but is in a childcare centre (high (red) risk of exposure) the overall overflow risk is high (red). Refer to Section 4 for key definitions to assist with the risk assessment.*

5.3.1 Appointment of Incident Controller

For a High Risk wastewater overflow, a Network Operator Incident Controller is required to coordinate the overall response to ensure effective communication between the parties. This person may be a Network Operator representative or a representative of the Network Operator service provider with the appropriate skills and authorisations and can be the same person that responds to the overflow. As an incident develops, the role of Incident Controller may need to be transferred from one individual to another as circumstances or needs change. The Incident Controller will act as the central point of contact for all parties involved in the response.

The role and functions of the Incident Controller may differ between Network Operators, but are generally expected to include:

- Ensuring that appropriate on-site health and safety provisions and site controls are established and maintained throughout the incident;
- Providing technical support and direction to the Network Operator service provider;
- Auditing the Network Operator service provider response;
- Point of contact for all communications with BOPRC and Environmental Health Officer;
- Neighbour and public communications;
- Coordinating environmental monitoring;
- Ensuring that all appropriate public health warnings are made, and that warning signage is in place, in consultation with the Environmental Health Officer;
- Auditing the clean-up process;
- Incident reporting for High Risk incidents;
- Ensuring that the incident response is in accordance with best practice;
- Final incident closeout signoff.

Where BOPRC staff, Toi Te Ora, Tangata Whenua or the Environmental Health Officer offer advice on aspects of the response, this advice would be directed through the Incident Controller who will act on that advice, having regard to health and safety implications, feasibility and likely effectiveness of any associated actions.

The Incident Controller is also responsible for continually re-evaluating the incident against the risk level definitions during response.

5.4 Signage and perimeter controls

The Network Operator and the Network Operator service provider must act to protect public health and safety where the public have access to areas contaminated by overflows, or where the public may be placed at risk by works associated with the response. This will likely involve establishing appropriate site perimeter controls to secure the site. Placement of site safety warning signage, cones and warning tape at the site perimeter or at public access points may be required. These controls should remain in place until risks to the public from the overflow incident have been resolved (i.e. when clean-up is complete and sampling results indicate no health risk remains). Where ongoing or regular discharge is occurring or widespread public health risk exists, consideration of permanent signage may be required.

Warning signage should be erected by the Network Operator Service and should be put in place as soon as possible following the overflow at locations where the public may access a waterbody or beach. *A warning sign template* is presented in Appendix D. If there is a risk that downstream areas may become contaminated, then warning signage may need to be deployed at further locations.

In some situations, it may also be appropriate to carry out a neighbourhood letter drop to advise of the incident. Where appropriate, the media may need to be used to provide additional public

health warnings. The Environmental Health Officer will determine if this is required and arrange for it if necessary.

5.5 Notify other parties

For overflows assessed as Medium or High Risk, additional parties need to be notified through escalation.

While each of the Network Operators may adopt different mechanisms for escalating incidents, escalation will generally occur as follows:

On confirmation that the incident is Medium Risk, the Network Operator service provider will advise the Network Operator call centre (or other appropriate party), who will then complete the following notifications:

1 – Notify BOPRC pollution hotline (0800 884 883). This should occur ASAP, but within one hour of Network Operator service provider arriving on site and confirming incident is Medium Risk.

2 - Notify Toi Te Ora (0800 221 555).

On confirmation that the incident is High Risk, the Network Operator service provider will advise the Network Operator call centre (or other appropriate party), who will then complete the following notifications:

1 – Notify the on-call Network Operator Incident Controller of the incident, its status and location. On being notified of the incident, the Network Operator Incident Controller would then travel to the site. The Incident Controller should arrive on site as soon as possible but within 60 mins of the Network Operator arriving on site, if not already on site.

2 – Notify BOPRC pollution hotline (0800 884 883). This should occur ASAP, but within one hour of Network Operator service provider arriving on site and confirming incident is High Risk.

3 – Notify Toi Te Ora (0800 221 555). This should occur ASAP, but within one hour of Network Operator service provider arriving on site and confirming incident is High Risk.

An *Incident Notification Form* is included in Appendix E to assist with notification.

Iwi groups should also be notified in accordance with the relevant Network Operator Tangata Whenua Notification Procedure.

5.6 Install containment

Containment is most effective when used in parallel with the repair phase, where resources allow. Where resources do not allow, the evaluation and implementation of containment options must, if possible, be undertaken in advance of the repair phase.

Containing an overflow involves establishing a physical barrier to limit overflow dispersal, reducing impacts on downstream areas (including land and waterbodies) and minimising the extent of the clean-up. Containment must focus on the overflow as a whole (the solids and contaminated water) and not simply focus on solids.

Containment options will vary on a case-by-case basis.

Consideration will need to be given to the environmental setting. If the overflow has occurred upstream of a swimming beach, then high priority might be given to establishing containment to minimise downstream contamination. There will also be situations where containment is not

feasible or safe. If the overflow has been assessed as High Risk then containment will be overseen by the Incident Controller. Containment may not be feasible if:

- Health and safety risks prevent safe site access or safe deployment of containment.
- Physical constraints (e.g. topography, vegetation, buildings) prevent access.
- Stream flow rates make safe containment impracticable.
- Overflow rates make containment impracticable.

Priorities for the location of containment solutions should consider (in this order):

- At source containment (minimises off-site escape);
- Diversion of overflow away from waterbody (minimises contamination of waterbody); and
- Containment in a waterbody (minimises downstream contamination but should only be considered if other forms of containment has not been possible, contamination of the waterbody has occurred, and stream and overflow flow rates are such that containment can be implemented effectively and safely).

Where instream containment is required it may prove necessary to install this both above and below overflow discharges to minimise the rate of downstream dispersion. In these situations, diversion of the upstream flow to below the downstream containment location may be necessary, possibly utilising by-pass pumping. It may also be necessary to shift containment to expand the contained area following environmental monitoring results. A summary of containment options and tools and equipment that may be required is presented in Table 3.

Table 3 Potential overflow containment options

Containment site	**Method**	**Resources required**
At-source containment	Protection of stormwater systems by blocking stormwater grates or other points of entry.	Sandbags, pipe plugs.
	Establishment of temporary storage using temporary weirs / bunds, excavation of detention area, or provision of containment storage.	Sandbags, inflatable bunds, shovels, excavator, mobile storage, temporary ponding.
	Bypass pumping from ponding area or direct from upstream wastewater line to downstream wastewater line to bypass the affected section.	Pumps, hose, generator.
	Vacuum truck removal from ponding area and discharge to wastewater system or approved disposal site.	Vacuum truck, hose.
	Cessation or diversion of upstream discharges where feasible.	Contact contributing catchment and request cessation of discharges to wastewater system.
	Where liquid cannot be contained, installation of screening equipment at the overflow source to remove and recover floatables and coarse solids.	Screen.

Diversion away from a waterbody	Similar to at-source options, however, deployment will be remote from the point of discharge. The objective is to capture the overflow before it enters a waterbody or divert to it away.	As for at-source options.
Containment in a waterbody	Temporary instream dams / weirs formed by placement of sandbags to form dam across stream channel.	Sandbags, shovels.
	Upstream and downstream containment with stream flow diversion pumping to convey clean flow from upstream to downstream past the contained area.	Sandbags, shovels, pump, hose (with fish filters).
	Having established instream containment, vacuum pumping to remove and recover contamination would proceed.	Vacuum truck, hose.

Consideration should be given to any approvals from regulators that may be required for certain containment options.

Details of measures used to contain an overflow should be clearly documented and provided to the Network Operator on request.

5.7 Repair

Repairs to stop the overflow may involve a wide range of measures. It is essential that repair and return to service is completed as soon as practicable. Where resources allow, implementing the containment and repair phases in parallel is the most effective response. Where resources do not allow, the repair phase should follow the containment phase as described above.

Some overflows may require a two-stage repair approach, involving temporary repairs to stop the overflow followed by permanent repair works.

In all cases it is essential that a record be kept of the cause and required repair. Multiple overflow events at locations are indicative of a wider maintenance issue that may require additional works to address.

5.8 Clean-up

The clean-up of an overflow will be undertaken by the Network Operator service provider and will generally commence following the establishment of containment and repair of the overflow. If the overflow has been assessed as High Risk then clean-up will be overseen by the Incident Controller.

A *best endeavours* approach to clean-up should be taken, with the objective of achieving the following:

- Removal of contaminated water;
- Removal of solids and sludge;
- Removal of sanitary products and other debris; and
- Removal of dead fish (if applicable).

5.8.1 **Clean-up methods**

Clean-up may involve the following methods:

- Pumping / vacuum recovery of contaminated water;
- Vacuum recovery of sludge;
- *Washdown* of affected areas on land;
- Rake / spade /sweep to recover solids and debris, and then bagging of material for disposal at a facility approved to receive wastewater contaminants; and
- Rehabilitation for areas with prolonged exposure. This may require excavation, regrading and re-grassing.

Washdown should only be undertaken where *washdown* water and associated wastewater can be captured. All *washdown* water should be collected for disposal at an appropriate facility or discharged back into the wastewater network. Any plans for rehabilitation such as excavation will need to be scoped and appropriate resource management planning approvals carried out.

5.8.2 **Flushing**

Where contamination of the stormwater system has occurred or where residual material remains in a watercourse following clean-up, *flushing* using reticulated water supply may be appropriate. *Flushing* may be particularly effective during summer or when extended low flow periods exist in a watercourse.

Before commencing any *flushing* utilising reticulated water supply, agreement should be reached with the BOPRC Pollution Control and compliance staff that this action is appropriate. If reticulated water is used for *flushing* it may be necessary in some situations to implement measures to dechlorinate the *flushing* water before discharging it to a watercourse.

Ideally flushing water should be collected at the outmost extent of impact from the overflow, however this may not always be possible, and consideration should be given to the ultimate receiving environment where further controls such as signage may be required. A procedure for flushing is included in Appendix F.

Rotorua Lakes Council does not typically use flushing due to the lake receiving environment.

5.8.3 **Disinfection**

Where contamination of land has occurred and a public health risk exists following clean-up, disinfection may be appropriate. Disinfection should always occur with health warning signage in place. Warning signage needs to remain in place until the incident has been closed-out and / or environmental monitoring data indicates that the public health risk has been reduced to an acceptable level.

Where contamination of land has occurred, and a public health risk exists, disinfection may be appropriate following the clean-up. A range of disinfection methods are possible, including the application of disinfectant chemicals and the application of hydrated lime. UV disinfection by sunlight will also, overtime, render many potentially harmful pathogens inert.

It must be noted that disinfectants can adversely affect aquatic life and should only be used with appropriate controls to ensure contamination of a waterbody does not occur as a result of the application or subsequent rainfall. Lime must not be used in a situation where contamination of water could occur. Spray application of chemical disinfectants using a back-pack sprayer may be appropriate where there is a risk of lime contaminating a waterbody.

Where foul odours are affecting aesthetic values odours can be masked using odour masking sprays.

Disinfection of wastewater contamination in houses and buildings requires specialist public health advice. This level of disinfection is not covered in this Guide.

5.8.4 **Fish rescue, recovery and screening**

Where significant contamination of a waterbody has occurred, it may be necessary for the Network Operator service provider to undertake recovery of dead fish and possibly also the rescue of stressed fish or fish that have become trapped behind containment barriers. It is most likely that these will be eels.

To undertake fish recovery the Network Operator service provider should be equipped with a scoop net and a fish bin for holding live fish recovered from the waterbody. Live fish should be transferred to the fish bin with a small quantity of clean water and then transferred promptly upstream to a point above the contamination.

Appropriate fish screens must be placed on pump and vacuum intakes when operating these in natural waterbodies. These screens should be a prefabricated coarse wire / steel mesh screens (mesh size no greater than 10 mm) capable of being fitted to a range of pump intakes.

Dead fish should be removed from site and disposed of to an appropriate waste disposal facility.

It is recommended that the Incident Controller contact BOPRC for further advice with regard to fish rescue, recovery and screening. It may also be appropriate to contact Fish and Game New Zealand in some instances, for example, if the overflow incident is in the vicinity of a trout habitat or hatchery.

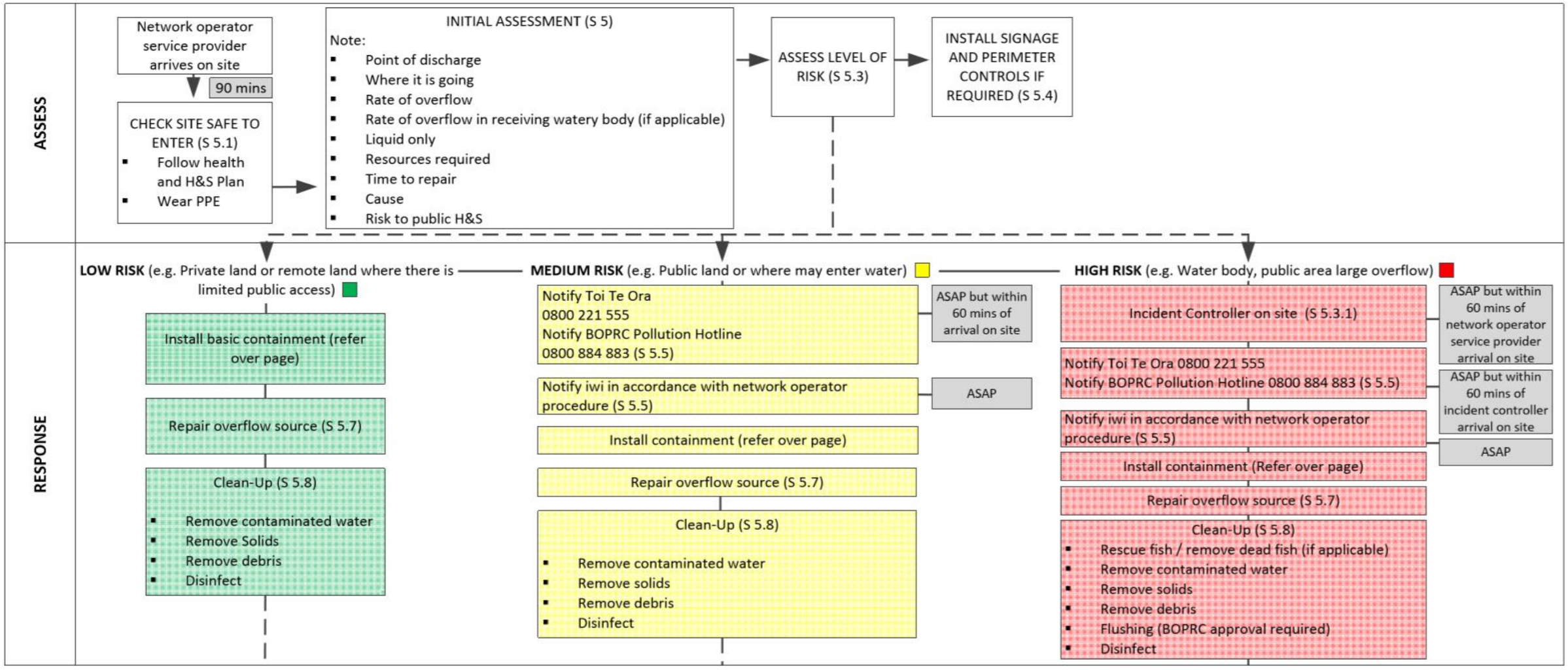


Figure 1 Overview of the assess and response steps

6 Environmental monitoring

Environmental monitoring should be carried out for High Risk overflow events as well as for Medium Risk overflow events to confirm if the overflow has entered water. Information collected will help to:

- Identify the extent of downstream contamination and hence the location of any required instream containment;
- Monitor and assess environmental and public health risks; and
- Confirm that the clean-up process has been effective.

Environmental monitoring can be completed by non-technical staff using the following simple environmental indicators:

- Visual cues;
- Odour cues;
- E. coli and Enterococci sampling; and
- Ammonia kit testing.

Further information on environmental monitoring, including timing, location and interpretation, is included in Appendix A. All environmental monitoring should be recorded and provided to the Network Operator on request.

7 Key performance targets

Key performance targets for overflow response are set out as follows:

Best Practice Criteria	**Who**	**Performance Target**
Network Operator service provider on-site	Network Operator service provider	Within 90 minutes of Call-centre notification unless agreed otherwise.
Initial notification of BOPRC Pollution Control Team that Medium or High Risk overflow has occurred	Network Operator call centre	ASAP, but within one hour of Network Operator service provider arriving on site and confirming incident is Medium or High Risk.
Incident Controller on site	Incident Controller	Within 1 hour of being notified of requirement to attend a High Risk overflow.
Notify Toi Te Ora	Network Operator call centre	ASAP but within 1 hour of Incident Controller confirming a High Risk overflow.
Notify Iwi	Network Operator call centre	ASAP
Monitoring	Incident Controller	Monitoring completed as appropriate for High Risk overflows.

Clean-up	Network Operator service provider	▪ Removal of solids; ▪ Removal of sanitary products and other debris; ▪ Removal of contaminated water; and ▪ Removal of dead fish (if applicable).
Close-out notification of BOPRC – High Risk overflows only	Incident Controller	Within ten working days of incident close-out.

8 Closeout and reporting

Incident closeout should occur when confirmation of clean-up to the required performance target (Section 7) has occurred and all phases of the incident response have been completed. Closeout will be carried out by the Network Operator Service Provider for Low and Medium Risk incidents. The Incident Controller is responsible for incident closeout for High Risk incidents. The closeout process will generally involve:

- Confirming that clean-up has been completed;
- Liaison with the Environmental Health Officer to assess the status of public health warnings, establish whether existing warning signage can be removed, or agree a program for ongoing or additional warnings;
- Assessing the need for any additional remedial works to prevent recurrence;
- Confirming that the incident has been managed in accordance with the Guide; and
- Confirming that the process has been appropriately documented with details provided to the Network Operator.

8.1 Incident closeout reporting

An *Incident Response Form* including incident closeout is provided in Appendix G. This template has been developed to serve as a tool for recording and documenting the incident management process for reporting to BOPRC and will be completed by the Network Operator using information provided by the Network Operator Service Provider at closeout.

Reporting of incident closeout of High Risk overflows (using the *completed Incident Response Form*) should be made to the BOPRC Pollution Control Team by the Network Operator within 10 working days of closeout being completed. A copy should also be provided to any other parties notified through the response process for High Risk overflows. An overview of the close out and reporting process is set out in Figure 2.

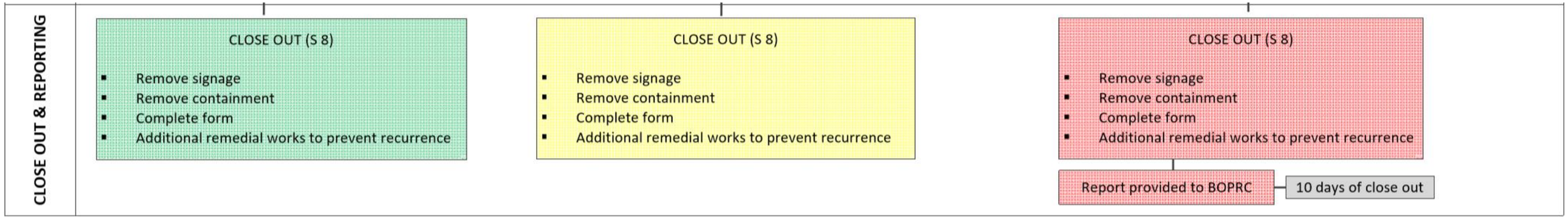


Figure 2 Overview of close out and reporting process

8.2 Annual reporting

In additional to reporting individual High Risk overflows as described above, the Network Operator should provide an annual report of all wastewater overflows to BOPRC by 31 August for the preceding July – June financial year. An *annual report template* is provided in Appendix H. The annual reports will provide valuable information for future investigations and preventative planning.

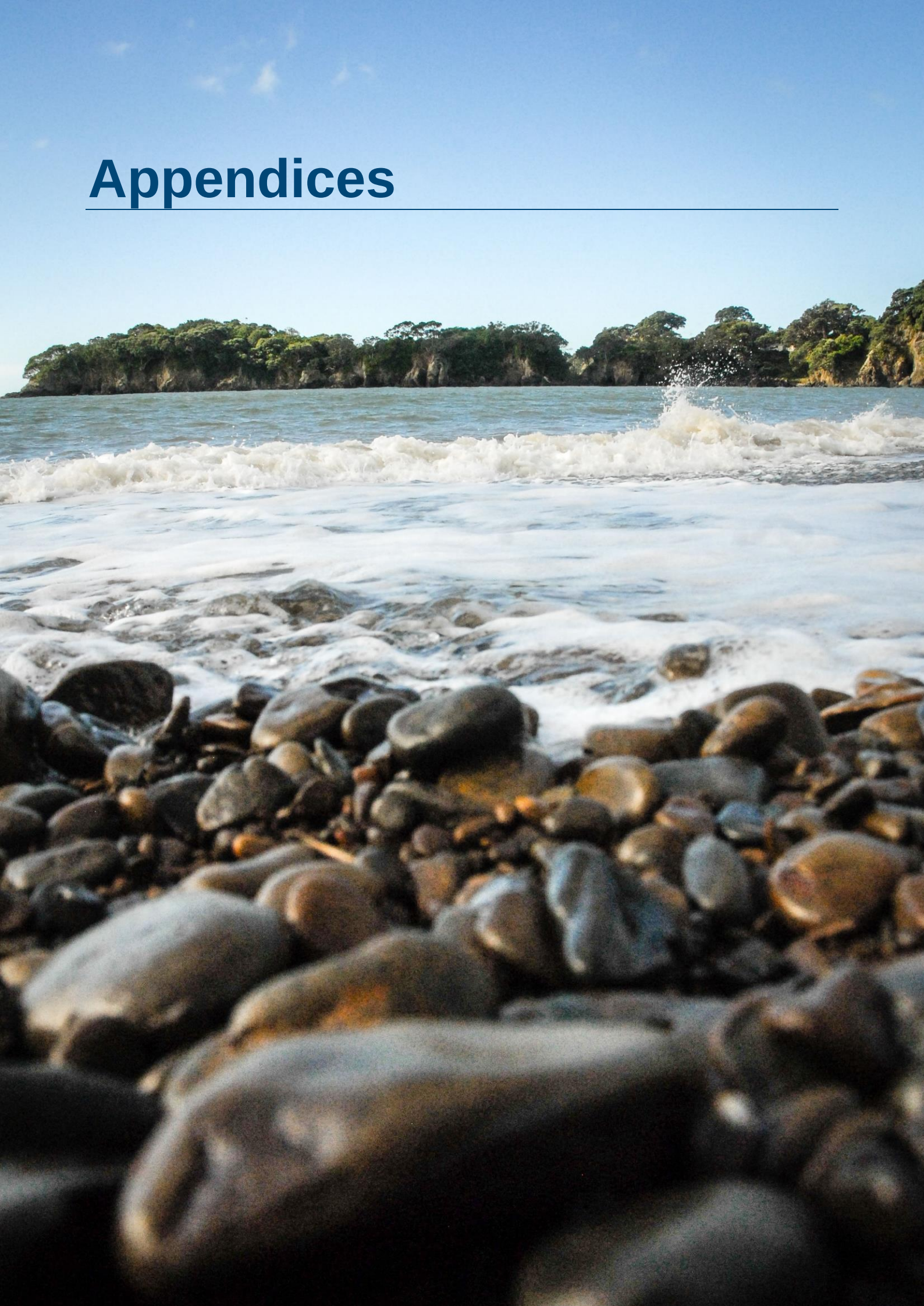
8.3 De-brief

De-briefings should be held after High Risk incidents and planned exercises. The purpose of a de-brief is to use the experiences and lessons learned during the incident or exercise to make improvements, so that incidents can be prevented from occurring again or managed more effectively. De-briefings are also used to identify and recommend other risk mitigation measures that may be required e.g. capital works.

9 Auditing and updates to procedures

It may be necessary for Network Operators to audit their response to wastewater overflow incidents against the Guide. To be effective this process should be undertaken on a half yearly basis and involve review of the response for a selection of incidents against the Guide and any supporting Network Operator procedures. Audit findings will serve as a basis for updating Network Operator procedures and the Guide, as required.

Appendices



Appendix A: Monitoring guidance

Environmental Monitoring

Purpose

Environmental monitoring of High Risk overflows should be used for the following purposes:

- To identify the extent of contamination and hence the location of any required containment;
- To monitor and assess environmental and public health risks; and
- Confirm the clean-up process has been effective with no other issues in this location.

Additionally, for Medium Risk Overflows, monitoring using an ammonia kit can be used to confirm a suspected overflow from land to water.

The Incident Controller has responsibility for ensuring that monitoring is undertaken for High Risk overflows as appropriate.

Methods

As environmental monitoring may typically be completed by non-specialist staff, this Guide recommends using a range of relatively straight forward methods to monitor wastewater contamination:

- Visual cues;
- Odour cues;
- E. coli and Enterococci sampling; and
- Ammonia kit testing.

Visual and odour cues can be used to detect wastewater contamination for most overflow receiving environments.

E. coli can be used to indicate contamination in freshwater environments and Enterococci to indicate contamination in saltwater environments.

Ammonia testing is recommended to confirm wastewater contamination of a waterbody where other signs are not immediately obvious, i.e. when an overflow has occurred to land and it needs to be confirmed whether a waterbody has received any wastewater. It can also be used to verify clean-up has been effective.

The Incident Controller should assess what type of monitoring is required in each situation. Any samples collected must be collected using appropriate techniques and care must be taken not to contaminate the sample.

Required timing and duration

Monitoring should begin as soon as possible and continue past the completion of clean-up. If monitoring results show the potential for residual contamination, monitoring should continue for a further three days, until results are satisfactory. The Incident Controller should assess the required timing and duration of monitoring in each situation.

Location of monitoring

Data should be collected over as wide an area as possible. This will mean that accessible points upstream and downstream of an overflow discharge will need to be visited to build up a picture of the spatial extent of contamination. As a minimum, where practical and safe to do so, monitoring should occur at a location upstream (for comparison), at the site of the overflow entering the waterway, and downstream of the overflow entering the waterway.

Location of monitoring in an open water body receiving environment such as a lake, estuary or harbour requires case by case design due to the potential effect of wind and tides on dispersion and mixing. Generally, a transect across the ‘mouth’ of a suspected contributing waterway may help to confirm the source and presence of wastewater contamination. Monitoring can also be

located at regular intervals along the shoreline both up shore and down shore from the suspected discharge point to delineate the extent of the contamination. The same sample locations can be used to verify when clean-up is complete. In complex cases it may be required to engage an expert to advise on appropriate monitoring and location.

Health and safety

Appropriate care is required when sampling in waterbodies and extra precaution is required where wastewater contamination may be present. Utilising a pole sampler will make sample collection from the bank/shore easier and reduce the risk of sample contamination. Where contact with contaminated water is required waders may prove necessary and disposable rubber gloves should be worn. Care should also be taken when working around water, and this should be carried out in accordance with an appropriate health and safety plan for the task at hand.

Interpreting data collected

Data collected using the above methods will need to be interpreted to determine if wastewater contamination may be present. The following can be used to guide the interpretation:

Method	Result	Interpretation
Visual and odour cues	Presence of faecal solids, paper, sanitary products	Wastewater overflow contamination present.
	Black / grey water	Wastewater overflow contamination likely present.
	Wastewater fungus growth or 'blood worms' present in the stream bed	Wastewater overflow contamination likely present for longer period of time.
	Wastewater odour	Wastewater overflow contamination likely present.
E. coli (freshwater)	> 550 E. coli per 100 mL[2]	If the result is greater than 550 E. coli per 100 mL and another monitoring method in this table indicates likely presence of wastewater, wastewater overflow contamination is likely present. Consideration should be given to potential for elevated background levels in certain areas.

[2] Consistent with the Action/Red Mode for Surveillance, alert and action levels for freshwater. MfE, 2003. Microbiological Water Quality Guidelines for Marine and Freshwater Recreational Areas.

Enterococci (marine)	> 280 Enterococci per 100 mL[3]	If the result is greater than 280 Enterococci per 100 mL and another monitoring method in this table indicates likely presence of wastewater, wastewater overflow contamination is likely present.
Ammonia	< 3 ppm: Low reading (compare with upstream sample)	Wastewater overflow contamination potentially present. Compare with upstream sample result.
	> 3 ppm: Moderate reading	Wastewater overflow contamination likely present.
	> 6 ppm: High reading	Wastewater overflow contamination likely present.

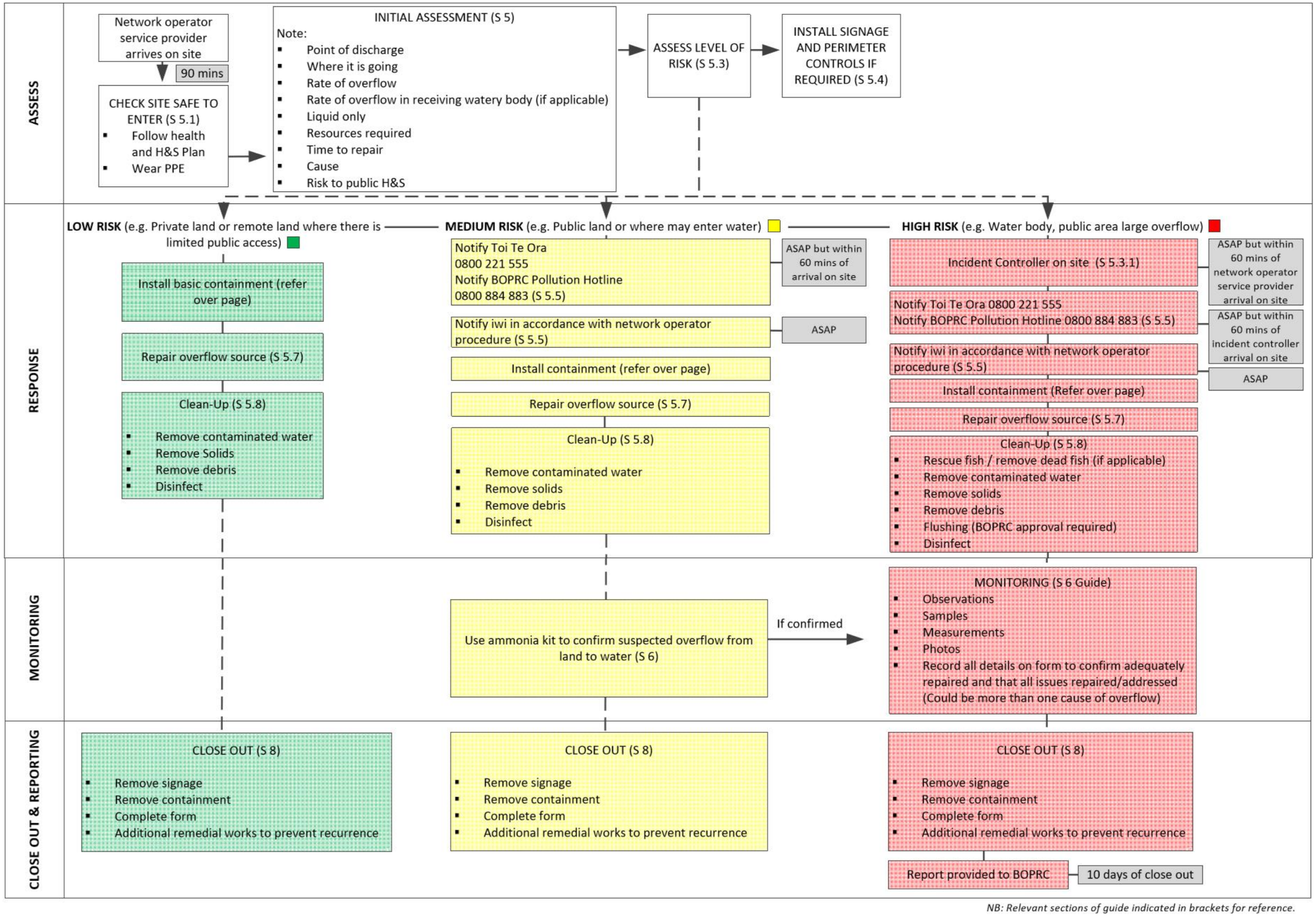
Note: The individual methods above are indicative only and a combination of methods is recommended to establish the likelihood of contamination. Of these methods, ammonia testing provides the strongest practical tool for assessing the likelihood of contamination. However, it is not suitable as a complete assessment of public health risk. Establishing a definitive basis for any contamination would require specialist and possibly detailed sampling and analysis.

Training

Specialist training in environmental monitoring may be required to ensure that samples are collected appropriately, monitoring equipment is utilised correctly and data is interpreted correctly. In some situations, specialist input may be required to conduct monitoring, undertake data analysis and provide specialist interpretation. This may include higher risk situations.

[3] Consistent with the Action/Red Mode for Surveillance, alert and action levels for marine waters. MfE, 2003. Microbiological Water Quality Guidelines for Marine and Freshwater Recreational Areas.

Appendix B: Process overview diagram



NB: Relevant sections of guide indicated in brackets for reference.

INSTALLING CONTAINMENT OVERVIEW (Refer to S 5.6 of guide)

CONSIDER:
- Access
- Rate of overflow
- H & S
- Approvals from Bay of Plenty Regional Council
- Stream flow (if applicable)

HIERARCHY OF CONTAINMENT	METHOD	RESOURCES
AT SOURCE	Protection of storm water systems by blocking stormwater grates or other points of entry.	Sandbags, pipe plugs
	Establishment of temporary weirs / bunds, excavation of detention area, or provision of containment storage.	Sandbags, inflatable bunds, shovels, excavator, mobile storage, temporary ponding.
	Bypass pumping from ponding area or direct from upstream wastewater line to downstream wastewater line to bypass the affected section.	Pumps, hose, generator.
	Vacuum truck removal from ponding area and discharge to wastewater system or approved disposal site.	Vacuum truck, hose.
	Cessation or diversion of upstream discharges where feasible.	Contact contributing catchment and request cessation of discharges to wastewater system.
	Where liquid cannot be contained, installation of screening equipment at the overflow source to remove and recover floatables and coarse solids.	Screen.
DIVERSION AWAY FROM A WATERBODY	Similar to at-source options, however, deployment will be remote from the point of discharge. The objective is to capture the overflow before it enters a waterbody or divert to it away.	As for at-source options.
CONTAINMENT IN A WATERBODY	Temporary instream dams / weirs formed by placement of sandbags to form dam across stream channel.	Sandbags, shovels
	Upstream and downstream containment with stream flow diversion pumping to convey clean flow from upstream to downstream past the contained area.	Sandbags, shovels, pump hose (with fish filters).
	Having established instream containment, vacuum pumping to remove and recover contamination would proceed.	Vacuum truck, hose.

Appendix C: Initial information gathering process

Suggested Initial Information Gathering and Notification Process

On receiving a report of a potential wastewater overflow, the Network Operator call centre staff will carry out an initial information gathering process so that they can brief the Network Operator service provider and deploy them to the site for further assessment and confirmation.

Required actions of network operator call centre on receiving initial report

Overflow incidents are often reported directly to the Network Operator call centre. Call centre staff will complete initial information gathering for the incident to establish the required response and will then notify the Network Operator service provider so that they can undertake further assessment.

Required actions of Network Operator staff/service provider if receive initial report

If the Network Operator engineering staff or service providers receive calls from the public directly, they should refer the caller to the Network Operator call centre (or log the call with the Network Operator call centre) to ensure that it is entered into the appropriate system and the appropriate organisations are notified.

Overflow incidents can also be identified through routine inspections or other site work by both Network Operator staff and service providers. Again, in these situations, notification of an incident needs to be made to the Network Operator call centre to ensure that it is logged into the system and the appropriate organisations are notified.

The initial information gathering process will involve the following series of steps, to be undertaken by the **Network Operator call centre**:

1. Log the call – establish a record of the caller, time, description of the incident and the address where it has occurred.
2. Record the nature of the incident using the following questions:

   Q - Is the overflow occurring within private property?

   NOTE - If so, then the responsibility for repair may fall with the private landowner. In some situations, wastewater from the public system can back-up and overflow via private gully traps. In this situation, the discharge would likely be continuous and of a significant volume. If the discharge occurs only when appliances connected to the private line are used, then it is likely that the overflow is due to a problem with the private drainage system and should be referred to the Environmental Health Officer. In addition, if there is a risk of the overflow entering or having entered water, the overflow must be referred to the BOPRC Pollution Hotline. In any case, the Network Operator service provider should be dispatched to site to confirm details.

   Q - Is the overflow continuous and/or of high volume?

   Q - Is the discharge to, close to, or is there a risk of it entering a stream, wetland, lake, pond, sea or a stormwater drain?

   Q - Is the discharge to land?

3. Notify the Network Operator service provider – having established the type of incident the call centre will then contact the Network Operator service provider and supply them with necessary details of the site and the overflow.
4. Dispatch Network Operator service provider to the site so that they can confirm the nature of the overflow and confirm details back to the Network Operator call centre (as part of the response).

Appendix D: Warning sign template

KIA TŪPATO
TEMPORARY
HEALTH
WARNING!

KAUA E KAUKAU

NO SWIMMING

KAUA E HII IKA

NO FISHING

KAUA E KOHI MĀTAITAI

NO SHELLFISH

This sign will be removed when water quality returns to normal

Date:

For more information call: **TLA TO INCLUDE LOGO AND CONTACT DETAILS**

Appendix E: Notification template

Note: This form is intended to be used for notification of Iwi in writing, or for other parties at the Network Operator's discretion

To: ……,

This is to notify you that a wastewater overflow has occurred. The details are as follows:

Physical address of overflow

Cause of overflow

Affected waterways

Date and time of overflow

Risk level

Has warning signage been put in place?

General location of warning signage

Is environmental monitoring required?

Current and planned actions

Next update from …… due ……

Estimated all clear date/time

Additional information/comments

Appendix F: Flushing guideline

Guideline for Flushing

Where contamination of the stormwater system has occurred or where residual material remains in a watercourse following clean-up, *flushing* using reticulated water supply may be appropriate. *Flushing* may be particularly effective during summer or when extended low flow periods exist in a watercourse as the additional baseflow will dilute and disperse contaminated water. *Flushing* should not, however, be seen as a clean-up method for every wastewater overflow. *Flushing* is a tool that should be utilised when conditions are such that the impact of *flushing* will not cause any further environmental damage or where not *flushing* will result in greater harm. If reticulated water is used for *flushing*, it may be necessary in some situations to dechlorinate the *flushing* water before discharging it to a watercourse as residual chlorine is toxic to aquatic ecosystems.

Before commencing any *flushing* utilising reticulated water, **agreement should be reached with BOPRC** that this action is appropriate. If *flushing* of a watercourse is to be undertaken the following process should be followed.

1. Incident Controller confirms clean-up is undertaken to a point where only *flushing* could further improve the environment.
2. Agreement reached with BOPRC that flushing is appropriate.
3. Flushing carried out in accordance with approval from Bay of Plenty Regional Council, with consideration of the following:

- Potential for adverse environmental effects on natural water courses associated with residual chlorine in treated drinking water.
- Potential for adverse environmental effects on natural water courses associated with any scour and erosion that might occur during a discharge.
- Use of appropriate environmental protection measures. These could include:
  - Establishing a stabilised discharge flow path – this reduces the risks of sediment erosion, and could include:
    - Direct discharge to curb and channel;
    - Using sandbags and a geotextile fabric to reinforce a discharge flow path;
    - Riprap rock protection may be required at transmission discharge locations.
    - Checking receiving environment – assess channel capacity, remove debris that might become mobilised;
  - Using dechlorination measures if mains source chlorinated reticulated water is used, such as running the water across open ground for 100 m or more where possible to allow chlorine to evaporate.
  - Collecting flush water at the outmost extent of impact from the overflow; however, this may not always be possible, and consideration should be given to the ultimate receiving environment where further controls such as signage may be required.

Through the flushing process the effectiveness of environmental controls should be monitored as per the *Environmental Monitoring* procedure. Duration and frequency of flushing will be determined by monitoring results. Decisions to use flushing and approval from BOPRC should be recorded on the *Incident Response Form*.

Appendix G: Incident response form

Wastewater Overflow Incident Form

Form instructions: Fill out all fields where there is no colour coding. Where there is a colour tick box, only fill out the corresponding question / section if required for the incident risk rating (i.e. only fill out the monitoring section for high risk (red) overflows).

Site Location:		Assessor:	
Asset Number:		Job Number:	
Date:		Incident Controller (if appointed):	
Time on site:		Weather Conditions:	

ASSESS

What is the ultimate receiving environment?

.....

Has the overflow resulted in exposure / public health risks (i.e. does access need to be restricted)? If yes, explain below what measures have been implemented (e.g. warning signs, including public health signage, tape, cones etc.)	Yes	No

Measure(s) deployed	Date	Time	Location
.....			
.....			
.....			

RISK RATING

Exposure / public health risk	☐ No risk of exposure or ingestion	☐ Limited risk of exposure or ingestion	☐ Risk of exposure or ingestion / contact recreation area
Receiving environment Is the overflow into or onto	☐ Private land	☐ Public land ☐ Land - may enter water due to proximity or heavy rain forecast	☐ Water
Risk Level and time of declaration	Overflow to private land / no public health risk	Overflow to public land / land where overflow may enter water / low public health risk	Overflow to water / large overflow to public land / public health risk
	Low Time	Medium Time	High Time .....

Note the risk rating is the higher level of risk of the exposure / public health risk and the receiving environment assessment. – i.e. if the overflow is to land (low (green) receiving environment risk) but is in a child care centre (high (red) risk of exposure) the overall overflow risk is high (red)

Incident Controller appointed for High Risk overflows? ☐

Estimated flow rate of overflow	☐ Trickle	☐ Flow	☐ Gushing	☐ No longer overflowing
Estimated flow rate of receiving water (if applicable)	☐ Small stream (<1 m wide / 0.5 m deep) / low flows)	☐ Medium stream (1-2 m wide / 1 m deep) / moderate flows)	☐ Large, swift flowing	☐ N/A / drain

Incident description (visible solids, anerobic water, 'blood' worms visible)	....
Resources required/deployed	....
Primary reason/cause of wastewater overflow	....

RESPONSE

Initial notifications made

☐ ☐ ☐ Call Centre Time: ……..	☐ ☐ BOPRC Pollution Hotline Time: …….. 0800 884 883	☐ ☐ Tangata Whenua Time …… Contact: …… *Refer Iwi Notification Procedure*
	☐ ☐ Toi Te Ora Time: …….. 0800 221 555	☐ Other Time: …….. Reason: ……..

Was containment established?	Yes	No	N/A
At source (how):	Date/time: ……		
Diversion (how):	Date/time: ……		
Instream (how):	Date/time: ……		
Any new containment required:	Date/time: ……		
Was the repair completed/ service restored? And how? (explain below)	Yes	No	
…… …… ……	Date/time:……		
Is this a temporary fix?	Yes	No	
Is follow up work required?	Yes	No	

If yes what?	……	
By who?	……	
Has clean-up been satisfactorily completed?	Yes	No
Clean-up work undertaken	(i.e. Removal of solids, paper, sanitary goods. debris, dead fish, contaminated water etc.)…… …… …… …… ……	Date/time: ……
Was flushing required? (if no, go to next section (*For High Risk Overflows*)	Yes	No
If yes, was approval to flush given by BOPRC?	Yes	No
	Name: …… Date: ……	
Was Incident Controller onsite? (required for flushing)	Yes	No
	Name: ……	
Were BOPRC staff onsite?	Yes	No
	Name: ……	
Details of flushing process used	……	Date/time: ……
Fish relocation requirements	……	Date/time: ……
Other requirements	……	Date/time: ……
How long did it take to stop the overflow?	……	
Incident Controller signoff (signature): ……	Date/time: ……	

MONITORING

For High Risk Overflows ☐

Observations (visual and odour) Assessor: ……

Location #	Description	Date	Time	Faecal Solids	Sanitary Products	Odour	Black/ Greywater	Photo ref
1	……	……	……	☐	☐	☐	☐	……
2	……	……	……	☐	☐	☐	☐	……
3	……	……	……	☐	☐	☐	☐	……
4	……	……	……	☐	☐	☐	☐	……

Ammonia Kit Assessor: ……

Location #	Description	Date	Time	Parameter	Result
1	……	……	……	……	……
2	……	……	……	……	……
3	……	……	……	……	……
4	……	……	……	……	……

Samples Round 1 Assessor: ……

Location #	Description	Date	Time	Label Ref	Date to Lab	Analysis Required	Result
1	……	……	……	……	……	……	……
2	……	……	……	……	……	……	……
3	……	……	……	……	……	……	……
4	……	……	……	……	……	……	……

Samples Round 2 Assessor: ……

Location #	Description	Date	Time	Label Ref	Date to Lab	Analysis Required	Result
1	……	……	……	……	……	……	……
2	……	……	……	……	……	……	……
3	……	……	……	……	……	……	……
4	……	……	……	……	……	……	……

Samples Round 3 Assessor: ……

Location #	Description	Date	Time	Label Ref	Date to Lab	Analysis Required	Result
1	……	……	……	……	……	……	……
2	……	……	……	……	……	……	……
3	……	……	……	……	……	……	……
4	……	……	……	……	……	……	……

Samples Round 4 Assessor: ……

Location #	Description	Date	Time	Label Ref	Date to Lab	Analysis Required	Result
1	……	……	……	……	……	……	……
2	……	……	……	……	……	……	……
3	……	……	……	……	……	……	……
4	……	……	……	……	……	……	……

Environmental monitoring complete with observation and results indicating no on-going environmental or public health risk? ☐

CLOSEOUT AND REPORTING				
				☐ ☐ ☐
	Containment removal approved by Incident Controller?		Yes	No
	Site safety measures and signage removed?		Yes	No
	Is there a history of overflow incidents or faults in same location or line?		Yes	No
	Describe any historic events ……			
	Is rehabilitation / reinstatement required/ additional remedial works required?		Yes	No
	If yes what?	…… ……		
	By whom?	…… ……		
	What proactive measures are being undertaken to reduce likelihood of re-occurrence?	…… …… …… …… ……		
	Incident Controller sign off		☐	
			Date: ……	Time ……..
	Report Provided to BOPRC		☐	
			Date: ……..	
	Photographs attached?		☐	

Appendix H: Annual report template

To be provided to BOPRC by 31 August annually for the preceding financial year

Network Operator:

Number of overflows to water in reporting period:

Number of overflows to land in reporting period:

ID	Date	Location name	Address	Assets involved	Cause	Weather conditions	Ultimate receiving environment	Risk level	Method used to resolve	Monitoring undertaken	Toi Te Ora and BOPRC informed?	Notes/details