Government of **Western Australia**
Department of **Health**

Wastewater Overflow Notification and Response Procedures 2021

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List of Acronyms

DBCA	Department of Biodiversity, Conservation and Attractions
DoH	Department of Health
DWER	Department of Water and Environmental Regulation
EHO	Environmental Health Officer
EP Act	Environmental Protection Act 1986
LGA	Local Government Authority
PDWSA	Public Drinking Water Source Area
WA	Western Australia
WSP	Wastewater Service Provider

Definitions

Authorised Officer: A person designated by an enforcement agency in accordance with Section 24 of the *Public Health Act 2016*. Includes Local Government, Environmental Health Officers

Built environment: is a man-made environment built for the purpose of human activity or living, but which also includes attached alfresco, pergola or patio type areas. Examples include private/public residence, workplaces, schools, restaurants, businesses, shopping centres, sporting clubs, hospitals, aged care facilities, public toilet facilities, swimming pools etc.

Controlled waste carrier: Has reference to the *Environmental Protection (Controlled Waste) Regulations 2004*. Schedule 1 lists sewage and soil contaminated with sewage, amongst many other waste products as a controlled waste. A carrier of controlled waste must also be licensed in accordance with these regulations.

Environmental Risk: the probability that the environment will be harmed due to exposure to a hazard (wastewater).

Health risk: the probability that a person's exposure to a hazard (wastewater) will cause harm.

Health sensitivity: refers to people who may be particularly vulnerable to the potential health impacts of being exposed to wastewater. These individuals may include, but is not limited to, the young (< 4 years of age), the elderly (> 75 years of age), pregnant women, and immunocompromised individuals (e.g., those with, undergoing or having had: HIV, chemotherapy, cancer, congenitally immune-deficient diseases, recent major surgery, compromised skin surfaces – wounds/cuts/abrasions, unvaccinated – tetanus/diphtheria boosters, Hep A, B etc.).

Land environment: is an outdoor area of land, which may be accessible and traversable for a variety of purposes or activities. Examples include: A yard, playground, park, bushland, scrubland, reserve, paddock, pedestrian pathway, road, car park, and mass gathering place etc. The surface of this land may be man-made, i.e. road asphalt, concrete, clay bricks etc., or the natural surface of the earth i.e. soil, sand, grass, clay etc.

Lead agency: Is the owner/agency responsible for the wastewater overflow (i.e. the wastewater owner or WSP), which oversees wastewater overflow response, notification and investigation (as appropriate). Lead agency may issue situation reports and/or media statements (as appropriate).

Note for definition: Where a wastewater overflow represents a significant public or environmental risk, DoH, DWER or DBCA may take the 'Lead agency' role for communication, investigation, issue of situational reports and media statements in liaison with other response agencies.

Media sensitive event: a wastewater overflow event, in which wastewater impact to a site/area is significant and/or likely to attract public interest. Media interest depend upon wastewater overflow type/quantity/duration, the site/area impacted, and/or the timing of the event. Examples may include: a wastewater overflow: i) into a popular recreational beach area during summer, ii) in open areas coinciding with a major public event (e.g. Perth foreshore/ grassed area during Australia Day), iii) within/or at the entrance to a major building (shopping centre, hospital school etc); iv) at major public access/thoroughfare areas (e.g. Forrest Place or high-volume traffic roads).

Overflow Relief Gully: Is a drain-like fitting located outside of a building (most often located outside of the laundry or bathroom area). It is designed to release wastewater away from the interior of the building to the outside area in the event of a sewage blockage.

Primary contact recreational water activity: is an activity in which the whole body or face and trunk are frequently immersed, or the face is frequently wet by spray, and where it is likely that some water will be swallowed or inhaled, or come into contact with ears, nasal passages, mucous membranes or cuts in the skin e.g. swimming, diving, surfing or white-water canoeing (National Health and Medical Research Council 2008).

Public drinking water source areas (PDWSA): Are areas constituted for the protection of water quality under the *Metropolitan Water Supply and Sewerage Act 1909* (WA) or *Country Areas Water Supply Act 1947* (WA), which include 'Underground Water Pollution Control Areas', 'Water Reserves' and 'Catchment Areas'. Refer to DWER Water Quality Protection Note 75 for a list of PDWSA areas or map.

Public health risk level: refers to an assigned level of health risk i.e. Very Low, Low, Medium or High, for a wastewater overflow event, which initially is assigned by the WSP, and when required, afterwards confirmed or re-assigned by the LGA Authorised Officer or DoH. The confirmed or re-assigned public health risk level assists to determine the clean-up, remediation and or public health measures to be undertaken.

Secondary contact recreational water activity: is an activity in which only the limbs are regularly wet and in which greater contact (including swallowing water) is unusual e.g. boating, fishing & wading, and including occasional and inadvertent immersion through slipping or being swept into the water by a wave *(National Health and Medical Research Council 2008)*.

Sewage: means any kind of, nightsoil, faecal matter or urine, and any waste composed wholly or in part of liquid. *(Health (Miscellaneous Provisions) Act 1911)*

Significant public health risk: with respect to a wastewater overflow event, is a wastewater overflow that constitutes a real or imminent risk of public health illness or disease. Estimation of risk considers the following factors:

1. Likelihood of public exposure and health sensitivity of those potentially exposed i.e. widespread public contact/exposure to a wastewater overflow event, which occurs either onto a prominent land area (e.g., South Perth foreshore) or into a popular recreational water environment (e.g., Swan River), or into a built environment (e.g. childcare or aged care facility)
2. Severity of wastewater overflow event, including the following considerations:
   - Estimated quantity of wastewater discharged
   - Quality of wastewater e.g. raw sewage treated wastewater etc.
   - Characteristics of impacted surface (i.e., low or high porosity) or impacted environment (i.e. PDWSA, remote areas)

- Environmental conditions e.g. tidal, wind, temperature and weather conditions
- Response time and effectiveness of response measures (e.g. cleaning, disinfection, drying, etc.).

Wastewater: see definition of sewage.

Wastewater Service Provider: the person who is responsible for the conveyance, treatment and/or disposal/reuse of wastewater.

Wastewater overflow: is a loss of control event involving the overflow, discharge, or spillage of wastewater into/onto a built, land, or water environment, from a wastewater treatment plant, sewer line, sewerage pump station, evaporation pond, sewage receptacle, or any other liquid waste transporting or receiving receptacle.

Wastewater volume: Is the amount of wastewater that is estimated to have discharged from any wastewater treatment plant, sewer line, sewerage pump station, evaporation pond, sewage receptacle, or any other liquid waste transporting or receiving receptacle, and generally does not include stormwater or rainwater in the calculated spill volume.

If stormwater or rainwater is considered to contribute considerably to the total wastewater overflow volume, then a separate calculation should be undertaken, to estimate the portion of wastewater based upon normal flow rates and overflow duration. In addition, the total estimated wastewater overflow volume (storm/rainwater + wastewater) shall be provided.

Note: In the estimation of wastewater volume, it is acceptable to use flow curves providing that they are relevant to the season and conditions i.e. rainfall curve in winter, dry curve during summer.

Water environment: is any waterway, watercourse or water body (i.e. ocean, marina, river, creek, stream, lake, ornamental lake etc.) which is part of the natural environment or built landscape.

1. Introduction

Wastewater overflows are recognised as a potentially serious public health and environmental risk, particularly when there is likelihood for people to come into direct contact with wastewater.

Wastewater can include several pathogenic (disease causing) microorganisms including bacteria, viruses and protozoa. People that have direct contact with, or who are inadvertently exposed to wastewater can experience severe or potentially life-threatening illnesses.

The main causes of wastewater overflows are:

- faults at, or to wastewater treatment plants; wastewater pumping stations; pressure, gravity or other sewer mains;
- faults associated equipment/ infrastructure blockages within the sewerage network due to fats/grease (accumulation), rags, wet-wipes, sanitary products, rocks/debris etc. that are disposed of or flushed into the pipes;
- tree/plant root intrusion causing blockages and sewer pipe damage;
- human error during excavation, or construction activities damaging sewer pipes;
- power outages and;
- severe weather events where heavy rainfall and stormwater can enter and overload sewerage infrastructure (pipes, ponds etc.).

Wastewater overflows may also occur because of inadequate design, servicing, and/or maintenance, of sewer infrastructure and onsite wastewater systems such as septic tanks and corresponding land application areas.

People may be at a high public health risk level of exposure when wastewater overflows occur into:

- water environments such as lakes, rivers, estuaries and coastal waters used for “whole of body” contact activities or when the wastewater overflow occurs in a public drinking water source area.
- built or land environments with health sensitive occupants, or if there is a high likelihood of wastewater exposure (direct or indirect) through e.g. inhalation of aerosols in an enclosed environment or physical contact with contaminated surfaces etc.

Wastewater overflows may also impact on the water quality and ecology of the receiving water environments. The degree, extent and duration of impact will be highly variable and depends on the nature of the water environment, environmental conditions at the time of the event, and the volume and type of wastewater discharged (raw or treated wastewater). The potential water quality impacts relate mainly to the input of nutrients, increased biological oxygen demand and input from low concentrations of various pollutants.

Western Australian (WA) state government agencies, Local Government Authorities (LGAs) and wastewater service providers need to be aware of their roles and responsibilities when dealing with a wastewater overflow. All agencies must ensure that the incident is managed in a rapid, coordinated and effective manner, thus preventing or minimising any detrimental effects to public health and the environment.

2. Scope and Application

These procedures are to be used by state government agencies, LGAs and Wastewater Service Providers (WSP) for wastewater overflow events which occur either into/onto built, land and/or water environments within WA, in accordance with the scope of wastewater overflow events detailed in 'Appendix 1 – Determining a Reportable Wastewater Overflow'.

This scope includes wastewater overflow discharge to a wide range of environments, including but not limited to the following:

- Naturally occurring fresh, estuarine and coastal waterbodies/waterways;
- Ornamental and/or artificial lakes or ponds created in a park, garden or housing estate;
- Onto the ground e.g. pathway, verge, road, public open space, parklands or front/backyard;
- Open drain or basin, or;
- Residential, commercial or public buildings.

The scope of this document also includes requirements for notification, response and close-out for a wastewater overflow event.

3. Roles and Responsibilities

Each agency has specific roles and responsibilities for either responding to, and/or minimising or preventing detrimental effects to humans, animals and the environment during a wastewater overflow event.

The roles and responsibilities for response agencies in a wastewater overflow event are outlined as follows.

3.1. Wastewater Service Providers

WSP are persons or agencies that are responsible for the conveyance, treatment or disposal/recycling of wastewater; to, from and within a defined scheme, network, or system of operation; with associated infrastructure/equipment that may include but not be limited to: wastewater treatment plants, pumping stations, pressure, gravity or other sewer mains, vacuum trucks etc.

WSP are bound by statutory authority to comply with provisions under the:

- *Environmental Protection Act 1986*
- *Health (Miscellaneous Provisions) Act 1911*
- *Public Health Act 2016*

For wastewater overflows, the WSP has obligations to notify and remediate impacted areas as stated within relevant sections of the Act and/or subsidiary legislation (i.e. *Environmental Protections Act 1986* - Section 72 Waste Discharge Notification Form; *Water Services Act* - Water Services Code of Conduct (Customer Service Standards) 2018).

Water Corporation is the primary WA WSP, responsible for most of the sewerage plant, networks, systems, operations, infrastructure and equipment. Other smaller scale WSPs may include LGAs, land developers, mining companies, or other persons, businesses, organisations or agencies. A current list of all licensed WSPs can be found on the Economic Regulatory Authority website.

In the event of a wastewater overflow, the WSP has a major role to respond, recover, repair and restore. **Key WSP responsibilities include**:

- Undertake containment and recovery operations (see Section 4.2.1);
- Notify designated response agencies in a timely manner (see Section 4.1.2);
- Erect signage/barriers to keep public out of affected /work area;
- Clean, disinfect and remediate impacted areas (as appropriate);
- Cooperate and assist the lead agency to ascertain the extent of the overflow and actions being undertaken to mitigate risk;
- Repair and replace affected infrastructure/equipment;
- Act as lead agency, including issuing situational reports to response agencies and a media statement (as appropriate) in liaison with relevant response agencies;
- Provide information to the lead response agency for events of a significant public health risk, or significant environmental risk. Consult and coordinate with key stakeholders;
- Provide details on the composition of wastewater;
- Install and maintain warning signs, primarily along the edge of affected environments (land or water) where wastewater has overflowed;
- Collect bacterial and other physio-chemical water quality indicators from affected water environments to determine wastewater overflow extent and impact, and to validate results of remediation;
- Notify known stakeholder groups and liaise with LGA to ensure all relevant stakeholders are notified;
- Remove warning signs, following advice from LGA Authorised Officer/Environmental Health Officer (EHO) or Department of Health (DoH) in accordance with (Section's 4.2.6 & 9.3), as to when the impacted environment's accessibility is determined safe for its usual or intended purpose, and;
- Conduct a detailed investigation of the wastewater overflow cause and to provide details to relevant response agencies.

3.2. Department of Health

The DoH has an important over-arching role to oversee and ensure the safe disposal of wastewater, and the timely and effective remediation of areas, surfaces, items and materials impacted by a wastewater overflow event in order to protect public health. A primary part of this responsibility is to liaise with and oversee WSPs and LGAs.

In accordance with the *Health (Miscellaneous Provisions) Act 1911*, the DoH via the Chief Health Officer and Authorised Officers, can be issued with the following general powers:

The Chief Health Officer may require LGA's to:

- Undertake promptly the cleansing, disinfection, collection and disposal in relation to sewage (wastewater overflow events) to the satisfaction of the Chief Health Officer and the LGA (*S.112 (1), 116 (a)*).
- Declare a house or part thereof unfit for human habitation (*S. 135*).
- Direct owner and occupier to abate a nuisance in a specific manner *(S. 184 (1))*.

An Authorised Officer may:

- Order a house, or part of a house, any furniture, goods, or things therein be cleansed to an Authorised Officer's satisfaction (*S.145*).
- Require the removal, destruction and/or disposal of matter to abate a nuisance *(S. 181 (1))*.

In the event of a wastewater overflow, the **key roles of the DoH include**:

- Liaise (as appropriate) with relevant response agencies e.g. LGA's, WSP, Department of Water and Environmental Regulation (DWER) and Department of Biodiversity, Conservation and Attractions (DBCA).

  Note: DoH will liaise with relevant LGA Authorised Officer for most medium to high public health risk level wastewater overflow notifications and for some low public health risk level notifications. The DoH will assist LGA, where required, with the public health risk classification. This advice may include a request for the LGA to:

  - Confirm wastewater overflow type (raw/treated), extent and impact, and;
  - Advise/assess clean-up, disinfection, remediation and other relevant public health protection measures as undertaken or potentially required.
- Provide health advice/support to LGA's, where WSP follow-up to undertake further response actions (e.g. additional clean-up, disinfection, remedial works and/or public health protection measures: bunting/barrier tape, warning signs etc.) appears necessary;
- Provide public health advice to the lead agency for media statements when DoH is not the lead agency;
- Act as lead agency and issue situational reports to response agencies and media statements for significant public health risk events;
- Issue public health advisories that warn people to avoid contact with popular recreational water environments, or prominent land environments contaminated with wastewater; in the absence of a public notification by the WSP, or where there appears to be a significant public health risk;
- Provide advice regarding public health risks from wastewater overflow's into water environments, onto land environments, or into built environments;

- Provide advice of the appropriate type and placement of warning signs;
- Request (and in exceptional circumstances collect) bacterial water samples from affected water environments (generally undertaken by the WSP and/or LGA);
- Provide health advice and recommendations in response to bacterial sampling results;
- Investigate (where required) wastewater overflow events of other entities such as aboriginal communities, mine-sites, school camps etc. Advise response agencies when it is suitable to remove warning signs;
- Issue a media statement/advisory to confirm that, a water environment is at an acceptable level for primary and/or secondary contact recreation; or that access to a land environment has been reinstated following a wastewater overflow, and;
- Provide close-out confirmation by email to WSP when satisfied remediation works have been completed for all wastewater overflows classified as High risk.

3.3. Local Government Authorities

Many wastewater overflows are classified as low public health risk level due to low volumes and quick site inspection, containment and remediation performed by the WSP. In those instances, LGA may decide if further action is required after notification is received from the WSP. However, LGAs have important roles and responsibilities within their district for wastewater overflow events classified as medium or high public health risk level.

LGAs can confirm, or re-assign (as appropriate) the initial public health risk level as assessed by the WSP in response to a wastewater overflow event. A site visit checklist Appendix 11 can be used by Authorised Officers to assess the initially allocated public health risk level and to direct any further actions on the part of the WSP and/or the owner/occupier where required.

LGAs can also implement communication and management strategies within their district, to alert/advise the public of a wastewater overflow, thereby reducing the potential for exposure e.g. communication (social media posts), management/training (response officers/teams).

LGAs that operate a sewerage scheme (as the WSP) are responsible to notify response agencies of any wastewater overflow events in accordance with Appendix 1 and to undertake the required response and remediation in accordance with Section 4.2.

Where a wastewater overflow impacts a built environment, LGAs may assess the wastewater overflow site, and provide directions/advice regarding site clean-up and remediation processes which conform to the best available standards of practice (Appendix 9). This may include directions to the owner and/or occupier (as appropriate) to clean, repair, replace unsanitary, faulty or damaged plumbing infrastructure, which may include the overflow relief gully.

LGAs shall ensure, and provide DoH confirmation (as requested), that wastewater overflow remediation has been undertaken to a satisfactory public health standard (See Appendix 2 and Appendix 3).

In accordance with the *Health (Miscellaneous Provisions) Act 1911*, **LGA general powers and responsibilities** include:

- Assess and inspect drains, sanitary conveniences and sewage treatment apparatus *(S. 107)*.
- Serve an order to enter land, open-up the ground and examine drains, sanitary conveniences and apparatus *(S. 108)*.
- Inspect and direct owner or occupier to repair, cleanse drains and fittings *(S. 78)*.
- Serve an order/notice upon owner/occupier to drain, clean, cover and fill-in pooling/ponding water, and/or to remove waste or stagnant water *(S. 87)*.
- Serve and affix notice to declare a house or part thereof unfit for human habitation *(S. 135)*.
- Direct owner to render clean or repair house within a specified time *(S. 139)*.
- Serve an order that a house or part of a house, or any furniture, goods, or things therein shall be cleansed to Authorised Officer satisfaction *(S. 145)*.
- Undertake the following types of works:
  - Restore and reinstate the sewer *(S. 79)*;
  - Clean sanitary conveniences and drains *(S. 112)*;
  - Collect and dispose of sewage *(S. 112)*
  - Clean and water streets *(S. 112)*

In the event of a wastewater overflow, the **key roles of LGAs include**:

- Attend the wastewater overflow site, where required, to investigate the cause and extent of the event, and to assess and confirm or re-assign (as appropriate) the initially assigned public health risk level (Appendix 11);
- Issue directions/advice (as appropriate) to the WSP and/or the owner/occupier regarding cleaning, disinfection, site remediation and public health protection measures;
- Issue directions/advice (as appropriate) to the owner/occupier to fix illegal internal plumbing connections or faulty internal plumbing infrastructure;
- Undertake site inspections to confirm the progress and satisfactory completion of wastewater overflow clean-up, disinfection, site remediation and public health protection measures;
- Erect warning signs (as appropriate) in affected land or water areas (in conjunction with, or in the absence of signs erected by the WSP);
- Collect bacterial water samples from wastewater overflow impacted water environments, that are utilised for primary or secondary contact recreational activities, or that are utilised for spray irrigation;
- Undertake bacterial swab sampling (as appropriate) in accordance with section 6.2;

- Provide relevant local information/advice to the lead agency for situational reports and media statements;
- Liaise with local water or land stakeholders e.g. local sporting groups such as rowing or surf lifesaving clubs, aquaculture industries and schools etc.;
- Disseminate information (as appropriate) to alert the public of affected water or land environments e.g. by social media, phone, door to door, letter drop, or on its webpage etc.;
- Provide a local contact for enquiries from the community (as appropriate);
- Respond to DoH request (site inspections, investigations, sampling collection or follow-up activates) after a wastewater overflow, and;
- Provide email confirmation to the DoH of satisfactory clean-up completed by the WSP for all High-risk events.

3.4. Department of Water and Environmental Regulation

Under the *Environmental Protection Act 1986* (EP Act), DWER is the primary agency responsible for pollution management in WA. It has powers to investigate, enforce and to order pollution to be abated and remediated.

The EP Act definition of 'pollution' includes impacts on public health and amenity. In certain circumstances, a discharge of waste to the environment (which incorporates water, land and built environments as defined in this document) is an offence under this Act.
In addition, the EP Act also defines offences for environmental harm, material environmental harm and serious environmental harm.

The *Environmental Protection (Unauthorised Discharge) Regulations 2004* also lists sewerage as a Schedule 1 item. Sewerage is a prohibiting material from being discharged into the environment unless it was authorised or occurred as a result of an emergency, accident or malfunction caused otherwise than by negligence.

DWER may act as lead agency for wastewater overflows that have a significant environmental impact, providing that they do not also have a significant public health risk; in which case DoH will assume the lead agency role.

In any event, DWER will continue to undertake all powers of investigation, enforcement etc, but where DoH is the lead agency, it should provide relevant supporting information to assist with situation reports and media statement preparation and release (as appropriate).

In the event of a wastewater overflow, the **key roles of DWER include**:

- Emergency response to the scene of major wastewater overflows into the water or land environment;
- Act as lead agency for wastewater overflows that have the potential for significant environment risk, but which are not a significant public health risk, by issuing situational reports to response agencies and issuing media statements;
- Liaise with the Water Service provider to ascertain the extent of the discharge and actions

being undertaken to mitigate the discharge into the environment;

- Provide advice to the lead agency for situational reports and media statements (where DoH, or the WSP act in the lead agency role);
- Provide on-scene incident control of major wastewater overflows (in conjunction with DBCA if an incident is within the Swan Canning Development Control Area);
- Collect and collate evidence of potential offences under the EP Act;
- Investigate the environmental impact and extent of a wastewater overflow (in conjunction with DBCA if the wastewater overflow is within the Swan Canning Development Control Area);
- Determine clean-up requirements and issuing clean-up directions to the responsible party, as required and empowered under section 73 of the EP Act;
- Within PDWSAs, work with the water service provider to ensure risk to drinking water quality and public health is addressed;
- Require a full report from the responsible party under section 72 of the EP Act; and
- Issue Licenses and permits for controlled waste carriers.

3.5. Department of Biodiversity, Conservation and Attractions

Under the *Swan and Canning Rivers Management Act 2006*, DBCA have powers and responsibilities to care for, control and manage the Swan and Canning Rivers and the tributaries that reside within the Swan Canning Development Control Area (Refer to 'Appendix 8 – Map of DBCA Development Control Area').

DBCA responsibility for the Swan and Canning Rivers and tributaries also includes enforcing certain pollution related provisions of the EP Act (as part of an operational agreement with DWER Pollution Response Unit in the event of a wastewater overflow).

In the event of a wastewater overflow into the Swan and Canning rivers, the **key roles of DBCA include:**

- Provide incident response management and coordination as the response relates to protecting the Swan Canning rivers;
- Act as lead agency in the absence of DWER for wastewater overflows that are a significant environmental risk, but which are not also a significant health risk, by issuing situational reports to response agencies and issuing media statements;
- Provide advice to the lead agency for situational reports and media statements (where DoH, or the WSP act in the lead agency role);
- Investigate the cause of the wastewater overflow if required, and;
- Provide advice and assistance to Swan-Canning system stakeholders, land-care groups, Swan River Trust members, the Minister and other incident response stakeholders.

4. Response and Notification Process

The response and notification for a wastewater overflow event needs to be undertaken promptly to ensure that any necessary actions can be undertaken in a timely manner, to prevent/minimise any potential detrimental impacts to humans, animals and the environment.

The individual agency responses for WSP, DoH and LGA's is outlined in Sections 4.1, 4.2 and 4.3. Generic response agencies contact details are detailed in Section 4.1.2 of this document.

4.1. Wastewater Service Providers

4.1.1. Immediate Actions at the Wastewater Overflow Site

Site Assessment, Containment & Recovery

As soon as a WSP is advised of a wastewater overflow, it shall immediately organise for a maintenance team/field crew to attend the affected site. The cause, extent and magnitude of the overflow shall be determined, and containment and recovery operations shall commence.

The WSP shall undertake the measures shown in Figure 1 to ensure that any potential public health and environmental impacts and risks from the wastewater overflow are minimised and abated where possible. More detailed information regarding each step follows.

Note: The listed steps generally proceed in sequence but may vary depending on each event.

Step 1. - Maintenance team/ Field crew utilise Personal Protective Equipment

The maintenance team/ field crew shall have readily available and wear, appropriate personal protective equipment (PPE) when attending the wastewater overflow site, thus preventing/minimising the possibility for infection or illness. For guidance, refer to Worksafe and DoH publication: 'Best practice guidance for reducing health risk for workers handling sewage, biosolids or recycled water'.

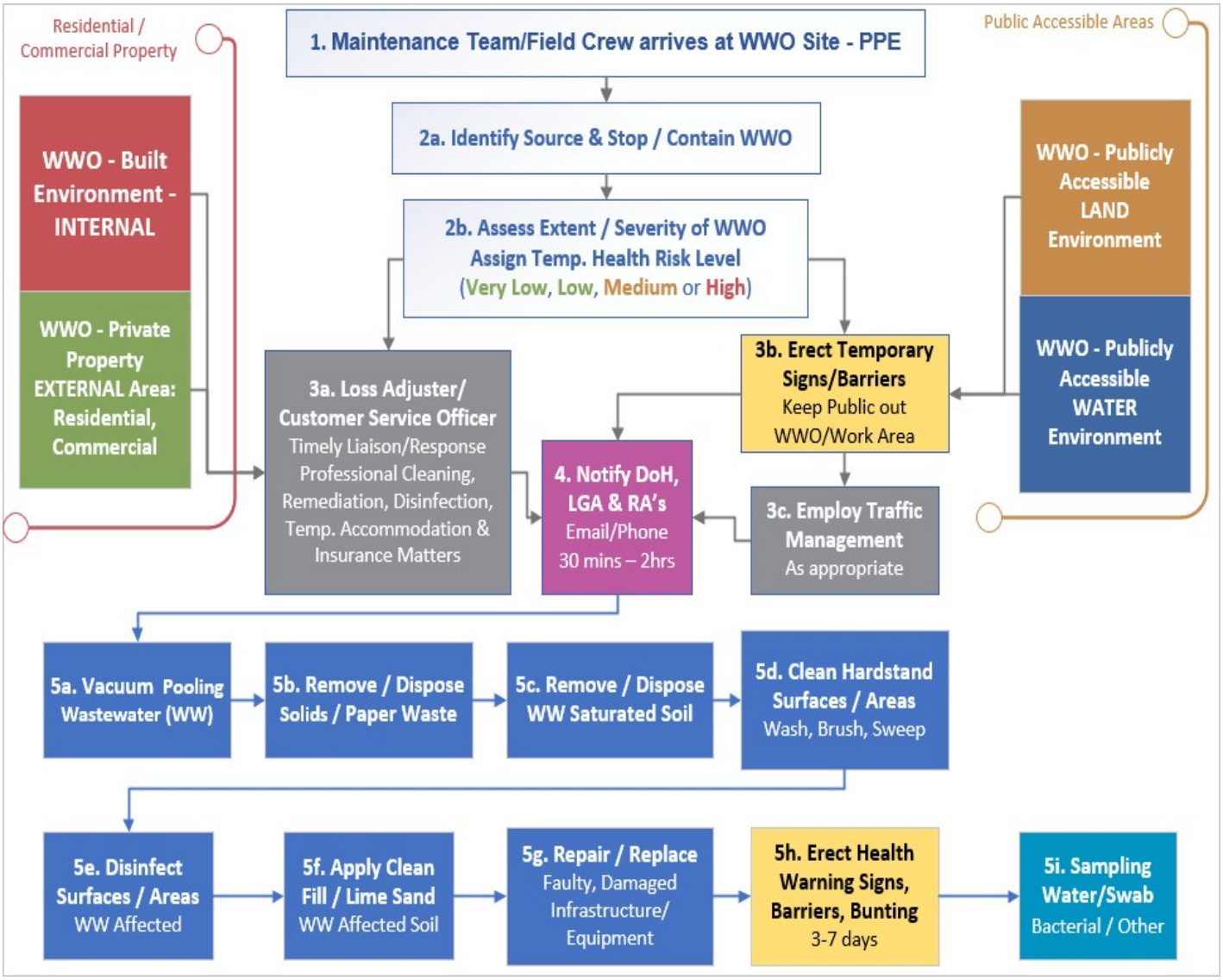
Step 2a. – Identify, stop, minimise or contain the source of wastewater overflow

One of the foremost priorities for the maintenance team/ field crew when arriving at the wastewater overflow site, is to identify the source/cause of the wastewater overflow and to initiate corrective actions to stop/minimise and/or contain the wastewater overflow. If the wastewater overflow cannot be stopped initially, then measures to minimise and/or contain the wastewater overflow should be engaged (if possible), until more substantive actions can be taken e.g. repair/replacement of parts or equipment. These initial measures are integral to reduce the scale and severity of the wastewater overflow, and the potential impact/damage that it can have upon public health, property and the environment.

To stop, minimise and/or contain a wastewater overflow, it may be necessary for example to clear a blockage, activate a shut valve, divert the flow, plug a line, vacuum to wastewater tankers, install a bund etc.

Wastewater should be prevented from contaminating other environments. This may require a bund (or equivalent) for stormwater or open drains, roads, gullies, streams, creeks, rivers or even a wastewater flow diversion created (if practicable) to prevent encroachment into land or water environments, and/or unaffected built environment areas.

Figure 1: Flow-chart of Wastewater Service Provider Response Actions at the Wastewater Overflow Site



Note: Some response actions in Figure 1 could happen simultaneously

Step 2b. - Assess Extent & Severity of Wastewater Overflow – Assign Public Health Risk Level

As soon as possible after Step 2a has been addressed, the maintenance team/ field crew shall undertake an assessment (may combine with Loss Adjuster/ Customer Service Operator) of the wastewater overflow impacted area to determine/assign an initial public health risk level. This public health risk level should guide the extent of WSP actions/measures anticipated to be undertaken to protect/minimise harmful impacts/effects to health.

The LGA / DoH will confirm/endorse, or potentially re-assign/elevate the initial assigned public health risk level. This may include a site assessment to confirm the public health risk level. If the initial public health risk level is elevated, additional measures to manage public health risk may need to be implemented by the WSP.

Step 3a. - Organise Loss Adjuster/ Customer Service Officer for Wastewater Overflow Impacted Built Environments

Wastewater overflows can impact internal and/or external areas of homes, business/workplace, commercial, and educational environments or settings. When wastewater overflow's impact the internal built environment, they can enter the premise via plumbing fittings such as an overflowing toilet, and/or through floor waste grates in bathroom/shower/laundry areas and/or even through hand- basins/sinks.

An internal wastewater overflow may indicate that there is a problem with the design, installation or operation of the overflow relief gully, and/or there is an internal or external sewerage blockage.

Some internal wastewater overflows are small and limited to easily cleanable surfaces/areas such as toilets, bathrooms, laundries and small sections of hallways. Occasional internal wastewater overflows may cause greater impact to surfaces/areas, items, equipment etc., impacting multiple rooms, living areas, bedrooms, offices, retail areas etc.

Wastewater overflows can soak/absorb into and impact carpets, soft woods, furniture, clothing and other materials/items. This may inevitably require the removal, disposal and replacement of the affected items, and/or professional cleaning and disinfection to restore items (at a minimum) to pre-wastewater overflow impact state/condition.

When the wastewater overflow impact to internal and/or external (e.g. enclosed or semi-enclosed patio etc.) areas is extensive, and/or appears to have caused more severe impact to surfaces/areas, materials, items, equipment etc., the WSP shall organise a 'Loss Adjuster' (WSP insurance representative) and/or 'Customer Service Operator' to liaise with the affected property owner/occupier, to assess the cause, extent of and damage to surfaces/areas, materials, items, equipment etc.

The 'Loss Adjuster'/Customer Service Operator should determine whether the property owner/occupier is able to engage a property/contents insurer. It shall provide recommendations and/or make immediate arrangements (as appropriate) to engage professional water cleaning and/or other cleaning /remediation specialists (certified in ANSI/IICRC S500 Standard with minimum training as a Water Damage Restoration technician, or equivalent), to commence specialist cleaning operations that include removal/disposal of affected materials/items etc., aeration/drying of impacted areas, disinfection etc.

When there are extensive wastewater overflow impacts to the internal area of a dwelling, the 'Loss Adjuster'/ Customer Service Operator shall offer the occupant (as appropriate/necessary) alternate accommodation for the duration of cleaning, disinfection and subsequent remediation.

Step 3b. - Erect signage and/or barriers to keep public out of affected/work area

The maintenance team shall erect (on arrival) appropriate warning signs/barriers/bunting etc. to discourage entry by the public into the affected area that has been contaminated with wastewater.

Warning signs and/or hard barriers shall be erected at and surrounding the impacted wastewater overflow area. Bunting or barrier tape should also be used to restrict and deter public access into

the primary affected wastewater overflow area i.e. the area where the public health risk is perceived to be greatest.

One of the purposes of erecting appropriate signage/barriers early in the response effort, is to prevent people from inadvertently walking, driving through, or having contact with wastewater whilst response/remediation works are in progress. Temporary signs/barriers required during remediation works and in some instances for up to 3 to 7 days.

Step 3c. - Employ traffic management/road clean-up

WSP shall engage traffic management services for wastewater overflows on main/heavy traffic roads to:

- assist with directing traffic away from the impacted area;
- enable effective site clean-up, disinfection and repair to affected wastewater; infrastructure/equipment (as appropriate), and;
- reduce the potential for cars to drive through and spray/spread wastewater overflow onto unaffected areas.

Appropriate barriers, witches-hats and signs need to be erected to advise the public regarding the incident and response works in progress. Street-sweeping services may need to be organised via the LGA or an alternate contracting service.

4.1.2. Notifying Response Agencies of a Confirmed Wastewater Overflow – Step 4

Refer to 'Appendix 1' for a summary table of reportable situations in which WSPs are required to notify response agencies. This includes all reportable and confirmed wastewater overflow's into/onto the:

- Built Environment
- Land Environment
- Water Environment
- Public Drinking Water Source Area (PDWSA);
- DBCA Development Control Area;

Phone Notification – Media Sensitive Wastewater Overflow Event

The WSP shall notify relevant response agencies by PHONE, nominally within 30 mins of a CONFIRMED wastewater overflow that may be 'Media Sensitive' i.e. likely to attract significant public interest. EMAIL notification shall follow as soon as possible to confirm/update the PHONE notification with as much information as possible of the as per notification details (Appendix 4).

Email Notification

The WSP shall notify the relevant response agencies by EMAIL with the details described in Appendix 4, as soon as practicable nominally within 30 mins to 2 hours of a CONFIRMED wastewater overflow that is NOT Media Sensitive.

If the information described in Appendix 4, is not available at the time initial notification,

this information shall be included within the final notification following completion of remediation requirements set out within this document (Appendix 2 and Appendix 3).

Note: Appendix 1 reportable wastewater overflow events does not remove the requirement for Water Corporation or any other WSP to comply with the provisions of Section 72 of the EP Act 1986, and any condition of licence issued under the EP Act. The WSP shall seek the guidance of DWER, if the wastewater overflow may have caused pollution, environmental harm, or is contrary to a condition of licence.

If applicable and available, the notification email shall include a copy of DWER EP Act Section 72 notification. If any information is unavailable at the time of notification, these details shall be provided in the confirmation email indicating completion of remediation.

Confirmation Email for Completed Remediation Works

Once site remediation, clean-up and disinfection work (as per Appendix 2 and Appendix 3) have been completed, the WSP shall send an email to confirm the completed works. This should include a copy of DWER EP Act Section 72 Notification (where applicable) if not provided previously and any other pending information related to Appendix 4.

Response Agencies contacts:

WSP shall notify Response Agencies as indicated below and in Appendix 1

(i) Department of Health

Report all wastewater overflows events (see Appendix 1).

Principal Contact

24 Hour On-call Duty Officer	**Telephone: (08) 9328 0553**
Email address:	ssalert@health.wa.gov.au

(ii) Local Government

Report LGA of affected jurisdiction and any other LGA which potentially may have become affected via email and/or by phoning (as applicable) Normal working hours are often Monday to Friday 8am – 4:30pm. The list of LGA contact details is available online

(iii) Department of Water and Environmental Regulation (DWER)

Report all wastewater overflows into the water environment or PDWSA. For land environment report if estimated wastewater overflow is ≥ 10 kL.

Wastewater overflows within a PDWSA must be immediately reported to the local drinking water service provider. This is usually the Water Corporation (Phone 131375). However, Water Corporation can advise in cases where they are not the appropriate contact.

Principal Contact

24 Hour Pollution Watch Duty Inspector	**Telephone: 1300 784 782**
Email address:	pollutionwatch@dwer.wa.gov.au

Secondary Contact

Pollution Response Manager/ Water Source Protection Planning staff for PDWSA wastewater overflows.

Email for DWER EP Act Section 72 Notification

Notification shall be sent by email for each DWER reportable wastewater overflow event (Appendix 5).

(iv) Department of Biodiversity, Conservation and Attractions

Notify DBCA where a wastewater overflow has discharged into the Swan or Canning Rivers or their tributaries that are part of the Swan Canning Development Control Area.

Principal Contact

24 Hour Duty Officer:	**Telephone: 9278 0981**
Email address:	riverpark.incidents@dbca.wa.gov.au

Secondary Contact

Manager River Systems Management Unit

4.1.3. Clean-up at the Wastewater Overflow Site – Steps 5a & 5b.

Step 5a. - Vacuum Pooling Areas of Wastewater

Any pooling areas of wastewater into buildings, onto open land areas, into storm-water drains, or where considerable quantities (≥ 5-10kL) of wastewater have overflowed into a publicly accessible water environment, shall be vacuumed (as accessible) into a controlled waste vehicle for disposal back into the wastewater reticulation system.

Note: Water environments shall be assessed on a case by case basis in conjunction with the relevant response agencies to determine whether vacuuming is required.

Step 5b. - Remove and Dispose of Solid Waste Material

Any solid wastewater material of quantity less than 200kg, in buildings, on open land or water areas shall be removed, packaged and disposed of to landfill. If the quantity of sewage solids is greater than or equal to 200kg, then removal and disposal shall be undertaken in accordance with the *Environmental Protection (Controlled Waste) Regulations 2004* as administered by DWER.

4.1.4. Remediate Wastewater Impacted Areas – Steps 5c – 5f.

Wastewater overflow's that occur either onto land environments and/or into the built environment require different remediation responses due to the unique nature and purpose of the surfaces being impacted. **Note**: Wastewater overflows may occur into both environments simultaneously.

Risk matrix tables have been developed to assist maintenance teams in identifying key risk factors that need to be considered for effective remediation of the land (Appendix 2) and the built (Appendix 3) environments. These factors include, but are not limited to:

- Health sensitivity of community members potentially exposed to the wastewater overflow;
- Surface characteristics of the impacted area (i.e. porosity of surface);
- Volume and extent of spill;
- Time to remediation (i.e. urgency of response to dry and disinfect impacted surfaces)

Land environment

Appendix 2 outlines the remediation requirements for wastewater overflow's impacting land environments. This document may be utilised as a risk assessment tool for first responders, maintenance teams and insurance assessors. Generally, remediation steps shall proceed in the sequence as follows:

Step 5d. - Hard-stand surfaces:

- Remove any gross contamination/sewage solids from impacted surface areas.
- Hose with running water, apply detergent, scrub surfaces with a hard-bristled brush/broom, and collect run-off water for appropriate disposal (as practicable).
- Apply/spray total surface areas with disinfectant. Apply as per manufacturer's instructions, including ecological, occupational safety and health considerations.
- Disinfected surfaces to remain undisturbed for a period (contact time), as per manufacturer's instructions to allow for effective disinfection.

Step 5c. - Natural land surfaces (sand/soil) – in health sensitive population access area:

- Remove impacted/saturated sand/soil from impacted areas to the depth of wastewater seepage and replace with clean-fill sand.

Steps 5c, 5f & 5h. - Natural land surfaces (other):

Impacted land surfaces other than sand, such as grassed areas/lawns, garden beds, soil etc., shall be remediated according to the public health risk level i.e. whether health sensitive population access the area:

Low to Medium risk (e.g. a residential property occupied by healthy young adults):

- Liberally cover impacted surface with hydrated lime and rake/mix into ground;
- Cordon off ground area for 3 - 7 days (See Section 2b). This allows lime, UV light, and other

inhibitory factors to decompose harmful pathogens and reduce odour.

High-risk (e.g. pre-schools/kindergartens, playgrounds, residential property with elderly occupants or young infants and/or pets):

- Follow measures above for Low to Medium-risk and.
- After 3 - 7 days (as determined), a layer of clean-fill topsoil should be applied to the impacted area to provide additional protection from any residual risk.

Alternatively;

- Consider removal of impacted surface area to the depth of the wastewater seepage and
- Replace removed surface with the clean equivalent.
- Dispose contaminated ground to an appropriate refuse facility.

Note: These recommended actions are based on mitigating risk to an acceptable level based upon the presenting circumstances.

Final determination of the public health risk level is to be done by LGA / DoH, as appropriate in consultation with the responsible persons/agents of the impacted land, the WSP and/or other response agencies personnel.

Soil sampling is generally not recommended. Microorganisms are ubiquitous in the natural environment and sampling results may be inconclusive or difficult to interpret. Therefore, sampling have limited cost-benefit (see Note on Appendix 2).

Built environment – Adjunct to Step 3a

Wastewater overflow's into built environments require urgent action to avoid further damage to property and increased public health risk to occupants.

Key considerations in the remediation process include:

- Restricting access to buildings or parts of buildings. Restriction may include the issue of a 'House Unfit for Human Habitation or part thereof' order by the LGA to the owner;
- Providing timely information to impacted occupants, and;
- Engaging restorers with the required training, experience and standards of practice, to achieve and ensure rapid cleaning, drying and disinfection of affected contents and structures.

Note: A declaration of 'House Unfit for Human Habitation or part thereof' may require the occupants to obtain alternate temporary accommodation until remediation works are complete.

Appendix 3 outlines the remediation requirements for wastewater overflow's impacting built environments and provides detailed coverage of the process. This document may be utilised as a risk assessment tool for maintenance teams/first responders/insurance assessors.

Events are categorised into Very Low, Low, Medium or High risk. For Medium or High-risk events, remediation should be undertaken by Professional Restoration Companies with employee/s formally certified in the Water Damage Restoration Standard (S500), as a minimum

or equivalent. This standard is published by the Institute of Inspection Cleaning and Restoration Certification (IICRC) and is recognised as the best standard of practice for wastewater overflow events. The IICRC website provides an up to date list of all companies in WA whom employ certified personnel.

Built environments affected by a wastewater overflow will normally require an insurance assessor (loss adjustor) to assess the affected area of the building and their contents, to determine the cost and insurance options available to the impacted party. A licensed plumber will also be in attendance to inspect plumbing and overflow relief gully and to assist in the determination of wastewater overflow cause and responsibility.

If the dwelling is temporarily unsuitable for occupancy and the WSP is responsible, or partially responsible for the wastewater overflow, alternate accommodation throughout the duration of remedial works should be provided.

Please note that \the decision for remediation or disposal depends on the porosity of the affected materials, as outlined in Appendix 9. Also sampling for monitoring purposes is generally not recommended if restoration is conducted to S500 Standard (see Note 6, Appendix 3).

The DoH document 'Interim Guidance for the notification and risk management of sewage overflows into buildings' provides further supporting information.

4.1.5. Repair/Replace Damaged/Faulty Infrastructure/Equipment – Step 5g.

Any broken or faulty equipment or wastewater infrastructure that has been identified to have caused and/or contributed to the wastewater overflow, and/or exacerbated its impact, shall be repaired or replaced to the appropriate standard, to prevent or minimise the likelihood for further wastewater overflows.

This may include the overflow relief gully (for built environment wastewater overflows), where a licensed plumber has identified a non-compliance with the Plumbing and drainage AS/NZS 3500.2:2018. Generally, any overflow relief gully modification or repair works, due to incorrect design/installation, or malfunction is the responsibility of the property owner.

Note: Repair works undertaken within the Swan Canning Development Control Area require an 'emergency works' permit through DBCA. This is important if the works involve disturbance to the riverbeds or banks. Consultation may be required with relevant stakeholders' e.g. indigenous communities.

4.1.6. Erect Health Warning Signs and Barriers – Step 5g.

Once the initial response and remediation works are complete, the WSP shall review, adjust and/or extend (as appropriate) temporary signage and/or barriers in line with the public health risk level. See Section 6 for specific requirements.

4.1.7. Undertake Water Sampling – Step 5g.

For significant public health wastewater overflow events, the WSP shall liaise with the DoH, to determine the relevant sampling locations and numbers having regard for Table 5.

The WSP shall repeat sampling in liaison with DoH, when bacterial sampling results are above the trigger levels associated with water activity or purpose (See Table 6).

See Section 7 for further bacterial water sampling instructions and details.

4.2. Department of Health

4.2.1. Initial Response

Review Wastewater Overflow Notification and if required contact LGA

Upon notification of a wastewater overflow (predominantly by email), DoH will review the information provided including the initial public health risk level. Based upon the wastewater overflow quantity, location, type of receiving environment and the potential sensitivity of the impacted or surrounding population, DoH will decide whether to contact the LGA to verify the initial public health risk level and undertake any follow-up actions which may include:

- Site visit to determine/confirm the initial public health risk level based upon extent and magnitude of the wastewater overflow, extent of area affected, measures undertaken, and any additional/required management/response;
- Liaison with the affected property owner/occupier to advise/confirm clean-up, remediation (as appropriate) and disinfection of affected areas, items etc.

Liaison with Wastewater Service Provider/ Notifying Agency/Individual

If the wastewater overflow notification details are incomplete or further information is required, DoH may liaise with the WSP/notifying agency/individual, to confirm relevant wastewater overflow details.

Liaison with Other Response Agencies

Liaison with other response agencies may include:

- **DWER** when there is a potentially significant environmental/media sensitive wastewater overflow and/or potential for contamination/impact of a PDWSA.
- **DBCA** when a wastewater overflow is potentially significant/media sensitive within the Swan Canning Development Control Area.

4.2.2. Liaison with Local Government Authorities

Provide Guidance and Directions for Clean-up, Remediation, Disinfection & Signage

DoH may provide specific guidance/directions to LGA regarding remediation and/or public health protection measures at the affected site to minimise public health risks. For example, based upon the magnitude of a wastewater overflow, DoH may request that additional signs are erected in areas at, or adjacent to affected access locations. The DoH may also seek LGA confirmation of the following items:

- Wastewater overflow extent/magnitude and affected area/items etc.;
- Current wastewater overflow response and undertakings;

- Confirmation of public health risk;
- Potential/likely health issues/concerns;
- Required/recommended response/management;
- Placement of warning signs and barriers;
- Water sampling locations;
- Media statements;
- Stakeholder communication, and;
- Confirmation of satisfactory remediation works (Appendix 2 and Appendix 3).

4.2.3. Bacterial Water Sampling

The DoH has an important role to assist WSPs and LGA's in interpreting bacterial water sample results and providing health advice/recommendations. Based upon sample results, the DoH may request additional actions e.g. follow-up samples, and/or a media statement to close-out a health warning etc.

The DoH may undertake bacterial water sampling (generally only in exceptional/ Media Sensitive situations), in conjunction with and/or in addition to LGAs and/or other response agencies, at impacted and surrounding water environment sites. e.g. during after-hour weekend events etc.

See Section 7 for further bacterial sampling details.

4.2.4. Follow-up to Response Measures and Close-out

The DoH will liaise with the WSP and/or responsible entity and will provide specific guidance or directions, if the clean-up, remediation, disinfection and/or public health protection measures at the affected site are (or appears to be) incomplete, inadequate or ineffective to address any potential public health risks.

Such guidance and/or directions will generally be based upon WSP notifications, feedback/reports from LGA Authorised Officer, and feedback from property owners/occupiers. Once DoH has received LGA and/or WSP confirmation that follow-up actions/measures have been completed to a satisfactory public health standard in accordance with these procedures, DoH will close-out the wastewater overflow event. The WSP will need to request DoH confirmation of close- out for all wastewater overflows classified as High risk.

4.3. Local Government Authorities

4.3.1. Notify Wastewater Service Provider and DoH

In some instances, LGA will be the agency notified by the public regarding a wastewater overflow. LGA shall as soon as possible (nominally within 30 minutes to 2 hours), advise the WSP and DoH of the potentially "reportable" wastewater overflow (Refer to 'Appendix 1 – Determining a Reportable Wastewater Overflow').

4.3.2 Investigate and Assess Public Health Risks

The LGA is responsible to investigate and assess potential or actual public health risks that may arise from wastewater overflows within their district.

LGA attendance at the affected site may be required to:

- Liaise with the WSP field crews and/or customer service representatives.
- Confirm/identify the affected areas, surfaces, items etc. that will require cleaning, disinfection, removal, replacement etc.
- Assess and confirm or re-assign the public health risk level and the associated response having considered the perceived or actual public health risks.
- Provide guidance/direction to WSP about the placement of warning signs and barriers;
- Undertake an investigation (as applicable) e.g. to identify/confirm the cause of wastewater overflow etc.
- Provide information or advice to the owner/occupier, including the provision of the DoH 'Support Factsheet' (Appendix 10) if not already provided (Built Environment);
- Issue relevant directions/orders to the property owner/occupier in accordance with the *Health (Miscellaneous Provisions) Act 1911*.

  Such directions include the cleaning, repair and/or replacement of onsite wastewater systems e.g. septic tanks and sewage fixtures as the situation require. This may also include overflow relief gully alteration works as advised by a licensed plumber.

  Note: LGAs legal powers and responsibilities for built environment wastewater overflows can be found in the DoH factsheet: '*Domestic Wastewater Overflows*';
- Ensure that cleaning, disinfection and remediation has been conducted according to the requirements as set out in Appendix 2 and Appendix 3, including the disposal of contaminated items and components of building structures (if appropriate) that are unable to be properly cleaned and disinfected.

4.3.3 Local Communication and Response Measures

LGAs may undertake relevant actions necessary to prevent or deter access by the public to the affected area, to minimise and/or reduce the public health risk.

For 'Media Sensitive' or other high public health risk level wastewater overflows, LGAs shall notify key stakeholders such as, sporting clubs, surf lifesaving associations, rowing clubs, schools etc., who utilise land or water environments impacted by a wastewater overflow.

LGAs are also encouraged to communicate potential or actual public health risks and concerns, that arise from high public health risk level wastewater overflows, that occur within their district to their community utilising e.g. social media, website, doorknocking, letter-drop etc.

4.3.4 Assist Department of Health

In some wastewater overflow events the DOH will require LGA assistance to:

- Attend and investigate wastewater overflow incidents;
- Assess wastewater overflow sites and determine/confirm the public health risk level;
- Advise/confirm the required cleaning, disinfection and remediation measures;
- Erect warning signs and physical barriers;
- Undertake bacterial water sampling, and;
- Issue a locally based media statement or public advisory.

Confirmation Email for Completed Remediation Works

At the completion of wastewater overflow clean-up, disinfection and remediation works for contaminated land and/or built environments, the LGA shall email DoH: ssalert@health.wa.gov.au, to confirm their satisfaction with the relevant works and measures undertaken.

LGA shall also advise DoH if any health issues/concerns remain, and what further actions are required or recommended to be completed by the WSP or responsible person including an estimated completion timeframe.

LGAs shall provide DoH with any available supporting information e.g. directions/orders issued, reports, results, photos etc. This information will for example enable DoH/LGAs to:

- Allow the WSP to remove health warning signs;
- Require further remedial actions if considered necessary, and;
- Close-out a wastewater overflow event.

LGA's can be assisted in this process by referring to the requirements set out in Appendix 2 and Appendix 3. For further information refer to 'Section 9 - Confirmation of Clean-up, Disinfection and Remediation and Section 10 - Closing-out a Wastewater Overflow Incident.

5. Determining Wastewater Overflow Public Health Risk Level

The WSP field crew/maintenance team need to make an initial public health risk assessment once arriving at the wastewater overflow site. They need to consider the size, scale, wastewater composition, types of surfaces and/or areas impacted, and the potential public health risk posed to persons directly impacted within a built environment (i.e. sensitive individuals), or to the broader community when wastewater impacts a land and/or water environment.

Field crew/maintenance team experience and guidance information provided on Tables 1, 2, 3; (Sections 5.1, 5.2 and 5.3) and Appendices 2 and 3 need to be used in determining the initial public health risk level.

This initial public health risk level shall be stated in the wastewater overflow notification (see Appendix 4) to DoH and LGA's, and may be confirmed, or re-assigned by the LGA, and/or the DoH following a site inspection or desktop assessment. If no reassignment of the initial public health risk level is requested by phone or email, the initially assigned level of risk is endorsed.

The LGA will inform the DoH by email, if the initial public health risk level needs to be increased. The DoH may then review/confirm the rationale for public health risk level reassignment and will notify the WSP. In some instances, the DoH will reassign the initial public health risk level directly and will notify the WSP.

The confirmed or re-assigned public health risk level (Very low to High) reflects the expected standard of clean-up, remediation and public health measures to be undertaken.

Tables 1, 2, 3 and Sections 5.1, 5.2 and 5.3 provides a general desktop guide to assigning public health risk level's based upon the wastewater discharge quantity, location and/or area impacted:

- Built environments (Table 1) (Residential, Commercial and Industrial both internal and external);
- Land environments (Table 2)
- Water environments (Table 3)

Appendices 2 and 3 provide a public health risk level guide for the built internal and land based environments, considering factors such as: type of surfaces, areas affected and people's health sensitivity.

Whilst the tables and appendices mentioned above, need to be considered together to determine the public health risk level, each wastewater overflow is unique, and needs to be considered in its specific context when determining the appropriate public health risk level.

For example, a wastewater overflow into bushland may require assigning either a higher or lower public health risk level, depending upon potential user access, weather conditions (hot dry weather will increase evaporation, disinfection by ultra-violet light and higher pathogen degradation rates).

Note: The decision for DoH to refer wastewater notifications to LGA for site liaison and/or inspection and public health risk level confirmation is an important independent verification part in this process.

5.1. Built Environment Wastewater Overflow's

Table 1 Desktop guide for assigning public health risk level for built environment wastewater overflows

WW Overflow Property Area	WW Overflow Property Location Detail	WW Overflow Volume	Public Health Risk Level	DoH Refer to LGA	Minimum Recommended LGA Action
Internal	Wet Area, Hallway, Room(s)#	< 100L	Very Low	No	N/A
		100 - 500L	Low	Yes	Liaise Owner/ Occupier + Site Visit/ Inspection
		500L - 1kL	Medium		
		≥ 1kL	High		
External	Back or Front Areas	< 100L	Very Low	No	N/A
		100 - 500L	Low		
		500L - 1kL	Low - Medium*	Yes	Liaise Owner/ Occupier
		1 - 2kL	Medium		Liaise Owner/ Occupier + Site Visit/ Inspection
		> 2kL	High		
	into **Swimming Pool**	< 100L	Very Low	No	N/A
		100 - 500L	Low	Yes	Liaise Owner/ Occupier
		500L - 1kL	Medium		Liaise Owner/ Occupier + Site Visit/ Inspection
		> 1kL	High		

 # Impact to carpeted areas &/or porous materials / surfaces elevates to next risk level
**Further consideration of individual events required to determine appropriate health risk level. Properties with health sensitivity occupants may elevates public health risk to next level*

5.2. Land Environment Wastewater Overflow's

Table 2 Desktop guide for assigning public health risk levels for land environment wastewater overflows

Public Access / Population Area Context	Key Examples of WW Overflow Location Environment Details	WW Overflow Volumes	Public Health Risk Level	DoH refer to LGA	Minimum Recommended LGA Action
Other than # 1. below		< 500L	Very Low	No	N/A
		500L - 1kL	Low	Maybe	Site Visit/ Inspection*
Sensitive Population & High Use / Access	1. School Area/ Playground/ Sandpit	< 500L	Low	Maybe	Site Visit/ Inspection*
		500L - 1kL	Low - Medium*	Yes	Site Visit/ Inspection
		1 - 5kL	Medium		
		> 5kL	High		
High Use / Access	2. Verge/Footpath/Road/Lane-way/Track, Ground Area (near Public Building), Grass/Lawn/Park Area, Open Accessible Public Area/Reserve Land	1 - 5kL	Low - Medium*	Yes	Site Visit/ Inspection
		5 - 25kL	Medium		
		25 - 50kL	Medium - High*		
		> 50kL	High		
Low Use / Access	3. Bushland, Sand Flats, Paddock, Pasture/Farmland	1 -10kL	Low	Maybe	Site Visit/ Inspection*
		10 - 25kL	Low - Medium*	Yes	Site Visit/ Inspection
	4. Drain/Channel/Gully/Swale/Comp Basin/Contain Bund (non-environmental/recreational water)	25 - 50kL	Medium		
		> 50kL	Medium - High*		

***** Further consideration of specific wastewater overflow required to determine appropriate risk/action level

5.3. Water Environment Wastewater Overflow's

Table 3 Desktop guide for assigning public health risk levels for water environment wastewater overflows

Water Use/ Purpose	Water Mixing/ Dilution	WW Overflow Volumes	Public Health Risk Level	DoH refer to LGA	Minimum Recommended LGA Action
Direct contact recreation (e.g. *swimming, wading* etc.)	Low	< 500L	Very Low	No	N/A
		500L - 1kL	Low		
		1 - 10kL	Medium	**Yes**	Site Visit/ Inspection
		> 10kL	High		
	Medium - High	< 1kL	Very Low	No	N/A
		1 - 10kL	Low	**Yes**	Site Visit/ Inspection
		10 - 25kL	Medium		
		> 25kL	High		
Irrigation *(grassed areas* etc.*)* and **Passive** recreation		< 5kL	Very Low	No	N/A
		5 - 25kL	Low	**Yes**	Site Visit/ Inspection
		25 - 50kL	Medium		
		> 50kL	High		
Passive recreation (e.g. *walking, bird watching* etc.)		< 10kL	Very Low	**Yes**	Info Only
		10 - 50kL	Low		Site Visit/ Inspection
		50 - 100kL	Medium		
		> 100kL	High		

Further consideration of specific wastewater overflow required to determine appropriate risk/action level

6. Warning Signs and Barriers

6.1. Context and Duration

Once the initial response and remediation works are complete, temporary signage and/or barriers, installed at the commencement of wastewater overflow response and remediation works, shall be reviewed, adjusted, or extended (as appropriate) in line with the public health risk level.

Warning signs and/or barriers shall be erected for a period of 3-7 days in consultation with LGA and/or DoH subject to the wastewater overflow context (i.e. low risk public access area vs. high use and/or sensitive population likelihood of exposure), to discourage public access and allow enough time for pathogen breakdown, through ultra-violet light, natural processes and inhibitory factors.

Note: *High use and/or sensitive population access areas may include, for example a park area, a residential front yard, a child play area, a popular recreational swimming beach or area etc.*

The requirement for signage may be waived if the LGA Authorised Officer and/or DoH, considers that the public health risk is low e.g. a minor wastewater overflow into a flowing water body, a less-frequented or inaccessible bushland area etc.

6.2. Land environments

Where a wastewater overflow occurs onto a land area, such as front-yard, verge, footpath, playground, garden, public access open area, parkland, nature park etc., high visibility safety mesh fencing or bunting, with accompanying warning signage shall be installed (as practicable) at the completion of the remediation works (Appendix 2), to provide a physical barrier to deter access by members of the public and/or animals.

6.3. Water environments

Depending on the magnitude and location of a wastewater overflow, warning signs shall be placed at approximately 50-150m intervals (where accessible), surrounding, or along the adjacent landside of the affected water area, or as directed by LGA or DoH. DoH may also request the WSP and/or the LGA to install additional warning signs when considered appropriate.

Table 4 presents a guide for the recommended distance and number of signs to install for a wastewater overflow into a water environment. There are several factors that determine the overall number and location of warning signs, and whether to install at the source, downstream and/or upstream. Factors may include: the type of water body/waterway, recreational access/use, wind conditions, tides, wave action, dilution, water movement and weather conditions. However, there are few general principles for location of warning signs:

- at least two (2) signs shall be placed either side of the wastewater overflow discharge point, in accordance with Table 4.
- Signs shall be placed along a river, creek or lake edge where the water is most affected.
- Signs shall be displayed on both sides in narrow accessible water sections.

- Signs for rivers and creeks need to be displayed both up-stream and down-stream, depending upon tides, currents, wind or weather conditions, in accordance with Table 4.
- High visibility safety mesh fencing, bunting or barrier tape shall be used to join signs together when a wastewater overflow has significantly impacted a popular accessible water environment.

Table 4 Recommended distance and number of warning signs

Wastewater Overflow Volume (kL)	Est. Dist.	Est. No.	
	Display both sides	**D/S**	**Source, D/S & U/S**
>1kL and 5kL	50 m	1	3
b/w 5kL and 10kL	100 m	2	5
b/w 10kL and 25kL	200 m	3	7
b/w 25kL and 50kL	350 m	4	9
>50kL*	500 m	5	11

*Additional signs should be confirmed with DoH

Note: *This table is ONLY a guide. Consult with DoH for specific wastewater overflow events if required.*

Refer to 'Appendix 7' for generic templates of warning signs that can be used for a wastewater overflow into a land or water environment.

7. Sampling

Bacterial and physio-chemical water sampling is mainly conducted for wastewater overflows impacting water environments (Section 7.1) and in some instances the built environment (Section 7.3).

This section discusses bacterial sampling requirements after a wastewater overflow event. Other water pollution indicators such as nutrients, chemicals, dissolved oxygen etc. maybe required by DWER or DBCA to confirm exceedances of environmental triggers and/or potential environmental impacts e.g. algal bloom formation, de-oxygenation of the water column, fish deaths etc. In some instances, sampling of anthropogenic chemicals (i.e. caffeine) or other parameters may be considered to confirm wastewater as the main source of the overflow into a water environment.

7.1. Water Environment - Bacterial Water Sampling

Daily bacterial water sampling is required, where practicable, in water environments impacted by a wastewater overflow determined to be of high public health risk level and/or 'Media Sensitive'. Sampling is required at the impacted, adjacent and/or surrounding (including upstream and downstream) water environment.

The WSP, LGA, or other response agencies (as appropriate), shall also undertake bacterial water sampling for medium public health risk level wastewater overflows into water environments (when DoH or LGA considers it necessary or appropriate).

The estimated wastewater discharge quantity, the type of receiving water environment, their potential or actual use or public access and relevant weather conditions will determine the public health risk level (Table 3). A guide for bacterial sampling locations/distance and number of recommended samples is presented in Table 5.

Bacterial water sampling shall be considered for a wastewater overflow between ≥ 1kL to < 5kL into a water environment. Larger wastewater overflows ≥ 5kL, whilst more likely to trigger bacterial water sampling, will require the WSP to confirm sampling necessity with DoH and/or LGA if there are any doubts to relevance and/or practicality in the specific context.

Bacterial water sampling can help determine:

- the likely extent and severity of the wastewater overflow at the site and adjacent surrounding upstream or downstream locations;
- the likely public health impacts to recreational users or other user groups;
- the suitability for primary and secondary contact recreational water activities or other water uses

  e.g. aeration, irrigation, fishing, aquaculture harvesting, environmental management etc;
- the appropriate health measures to be undertaken e.g. warnings signs, media statements, additional sampling etc;
- the decision to close-out an event after confirmation of satisfactory water sample results.

When the public health risk level is medium or high, the DoH may request the LGA, undertake

additional bacterial water samples with the aim to complement and/or expand upon sampling undertaken by the WSP. This additional sampling can provide confirmation on the public health impact and any public health protection measures required.

7.1.1. Sampling Locations

When a wastewater overflow enters a water environment, there may be immediate public health risk or environmental concerns. These risks or concerns can extend beyond the initial wastewater overflow water entry point, and include adjacent, upstream (U/S) or downstream (D/S) water body areas. There are several factors which may determine the overall number and location of samples. These factors include the type of water body, water body use and access, water body flow, waterway, wind conditions, tides, wave action, dilution, water movement, and weather conditions.

Table 5 presents a guide for sampling distance and locations. However, this could change based on specific situation and context.

Table 5 Guide for Water Environment bacterial water sampling

Wastewater Spill Volume (kL)	Dist. for Adjacent or D/S Samples	No. of D/S Samples	Total No. Samples: (Source, D/S & U/S)
>1kL and 5kL	100 m	2	5
b/w 5kL and 10kL	200 m	3	7
b/w 10kL and 25kL	350 m	4	9
b/w 25kL and 50kL	500 m	5	11
>50kL*	750 m	7	13

*Additional sampling may be required by DoH

Bacterial water samples should be collected in accordance with the DoH publication: Microbiological water sampling for recreational environmental waters.

The bacterial water sampling indicators to be reported include:

- *Enterococci* (all water environments)
- *E. coli* (all water environments, except offshore ocean outfalls)

Bacterial sampling for 'Media Sensitive' events are generally undertaken daily until satisfactory results are confirmed.

Note: It generally takes at least 48 hours following a wastewater overflow event, for bacterial water quality within a water environment, to return to a level suitable for primary contact recreation activity.

7.1.2. Laboratory Notification and Reporting

As a courtesy, the officer undertaking bacterial water sampling in response to a wastewater

overflow event, should contact the laboratory to advise of in-coming samples and the need for priority analysis (as required).

Only results from NATA accredited laboratories are accepted. Please check the Guidelines for the Laboratory testing of water to ensure Western Australian DoH Compliance and the NATA accredited laboratories.

PathWest Water laboratory is often used, and contact details are listed below.

During normal working hours (8am – 5pm):	**Telephone: 6457 2583**
After Hours (Duty Security Officer):	**Telephone: 6457 2536**
Email address:	waters.pathwest@health.wa.gov.au

A copy of all bacterial water quality sampling results shall be emailed to the DoH: ssalert@health.wa.gov.au, the relevant LGA and DWER/DBCA (as applicable), for assessment and confirmation of actions or outcomes.

7.1.3. Sampling Levels/Triggers

Depending upon the type of water body impacted, and the frequency of bacterial water quality monitoring that may occur i.e. either routine, irregular, or none, background (pre-wastewater overflow) bacterial water quality may or may not be known.

There are also many factors that may influence bacterial water quality within a water body e.g. bird populations, adjacent livestock areas, domestic pets or animals, recent heavy rainfall, stormwater drain flows, proximity to onsite wastewater systems and recreational water use. These factors need to be duly considered in conjunction with the sampling results. However, for a wastewater overflow of significant quantity, it is common to expect very high bacterial counts, often in the thousands or tens of thousands.

For the assessment of impacts of a wastewater overflow DoH has established as a guidance a short- term trigger levels for *Enterococci* and *E. coli* (See Table 6).

For primary contact recreational (e.g., swimming, water skiing, etc.) water environments *Enterococci* trigger levels with a range of 100 - 700 MPN/100mL for one or two consecutive samples, provides a guide to further consideration of public health risks in association with relevant conditions, background sampling data and any other factors. An exceedance of the one sample trigger level will usually require follow-up samples.

Secondary contact recreation (e.g. kayaking, wading etc.) trigger level for *Enterococci* is 10-fold the primary contact recreational trigger i.e. in the range of 1000 - 7000 MPN/100mL.

Whilst DoH does not have a formative guideline/trigger level for *E. coli,* the following values are recommended: for primary contact recreation a level in the range of 150 - 400 *E. coli* CFU/100mL, and for secondary contact recreation, a level in the range of *E. coli* 1000 – 4000 CFU/100mL.

Note: These are only reference values to guide public health risk assessment/actions including follow- up samples.

Table 6 contains recommended trigger levels for different human exposure scenarios.

Table 6 Bacterial trigger levels for recreation and other water end uses

Human Exposure Type	Examples	Human Exposure Level	Indicator	One Sample Trigger Level	Two Consecutive Samples Trigger Level
Primary Recreation	*Swimming, diving, water-skiing, surfing* etc.	High	*Enterococci*	700 MPN/100mL#	100 MPN/100mL#
			E. coli	400 CFU/100mL*	150 CFU/100mL*
Secondary Recreation	*Wading, kayaking, fishing* etc.	Medium	*Enterococci*	7000 MPN/100mL#	1000 MPN/100mL#
			E. coli	4000 CFU/100mL*	1000 CFU/100mL*
Dermal & Inhalation	Urban irrigation with **unrestricted** access	High	*E. coli*	10 MPN or CFU/100mL+	
	Urban irrigation with **some unrestricted** access, fountains & water features	Medium		100 MPN or CFU/100mL+	
	Urban irrigation with **enhanced restricted** access	Low		1000 MPN or CFU/100mL+	

Trigger levels developed by DoH in 2015 as a Ministerial condition for Champion Lakes Regatta Centre.

***** Not a formal guideline/trigger level – for comparative/reference purposes only. Utilising equivalent levels for faecal coliforms from the *ANZECC, 2000, Australian and New Zealand Guidelines for Fresh and Marine Water Quality.*

+ Trigger levels developed by DoH in 2018 for Constructed feature lakes, as modified from 'Table 8. Minimum monitoring requirements of the 'Non-potable Uses of Recycled Water in WA'.

Note: The operation of aeration pumps, or the use of water for irrigation from ornamental ponds, constructed lakes or other types of water bodies, following a wastewater overflow, may cause public exposure through inhalation (contaminated aerosols, spray-drift) or dermal contact through direct contact with droplets. Exposure may be more prevalent with strong winds or when public access is more likely e.g. early mornings or late afternoons etc.

7.2. Water Environment – Physio-Chemical Water Sampling

Where the risk to the environment is determined as moderate to high full suite of physio-chemical samples should be collected in conjunction with the bacterial samples by the WSP. This additional sampling can potentially provide confirmation on the environmental impact of the discharge. The following analytes should be included DO, TN, TP, BOD, pH, COD TDS, TSS, and heavy metals.

Water sampling results shall be emailed to DoH (ssalert@health.wa.gov.au) for public health risk assessment and to DWER (pollutionwatch@dwer.wa.gov.au) for environmental and/or pollution risk assessment.

7.3. Built Environment - Bacterial Swab Sampling

When a wastewater overflow occurs either into (inside area), and/or onto (external area), of a built environment i.e. residential/commercial property, depending upon the extent of the wastewater overflow and the quantity of wastewater discharged, the impacted property owner/occupier, may seek confirmation via bacterial swab sampling that the clean-up, disinfection and/or other remediation measures have been undertaken to a standard that would render the premise safe for occupation.

Clean-up, disinfection and remediation detailed in Appendix 3 and conducted as per ISO standards does not require routine microbial sampling. However, property owners/occupiers may independently undertake or request in certain circumstances e.g. based upon the health sensitivity of its occupiers, that bacterial swab sampling be undertaken, to provide greater confidence that cleaning, disinfection and/or remediation have been undertaken to a level sufficient to protect health.

Note: If restoration is conducted to S500 Standard, this should, in most instances, remove the need for sampling analysis. However, where bacterial swab sampling is requested without reasonable justification, but primarily for personal reassurance, the financial cost for sampling/analysis should be borne by the owner/occupier.

If swab samples are undertaken, commercially available microbiological kits could be used by the owner/occupier. Alternatively, sampling may be undertaken by, or provided under the guidance of an appropriately qualified professional (e.g. microbiologist, LGA Authorised Officer or other experienced/trained personnel).

Sampling methods for testing for pathogens on surfaces and materials include:

- Sample/rinse (sponge, swab) or,
- Direct Agar Contact

It is recommended that a representative control sample from an unaffected area of the property is obtained in addition to the target sample for comparison and interpretation.

Note: Prior to bacterial swab sampling, visual inspections by the LGA and the professional cleaning/restoration company should have been undertaken to identify wastewater impacted areas/surfaces/items/materials etc., and to also confirm cleaning, disinfection and restoration.

A moisture assessment should also be undertaken to monitor/confirm progress towards ‘ideal standards’ for affected surfaces and materials. The equipment that may be used includes moisture meters, thermometers, hygrometers, psychrometers and thermal imaging cameras.

Note: The DoH generally does not recommend routine bacterial swab testing of indoor or outdoor surfaces for built environments that have been impacted by a wastewater overflow for several reasons including:

- No commonly accepted swab sampling guideline levels in these types of environments, hence it is difficult to know with certainty what is safe and what is not.
- Unknowns and variables associated with sampling, including;

- Background (pre-wastewater overflow) bacterial levels,
- Surface type,
- Different environments e.g. internal vs. external,
- Sample process controls: sample method, handling, potential cross contamination etc.
- Swab sampling is indicative and cannot provide complete assurance of health safety.

Therefore, when DoH receives bacterial swab sampling results; it cannot provide assurance, only general guidance as to whether sampling results appear to be satisfactory from a health perspective.

8. Media Management

The DoH is the lead agency for advising the public regarding public health impacts associated with a wastewater overflow event.

The DWER is the lead agency for advising the public regarding a wastewater overflow that has the potential to significantly impact the environment.

8.1 Significant Public Health Risk

The DoH shall liaise with the WSP, LGA, DWER and other response agencies (as applicable) when:

- Determining whether a wastewater overflow poses a significant public health risk;
- Coordinating, preparing and releasing a media statement/alert.

If DoH determines that the wastewater overflow event poses a potentially significant public health risk, it may;

- Act as the lead agency in liaison with other response agencies, to issue a public health media statement; providing the media statement to response agencies prior to release.

Note: A response agency can issue an independent media statement, providing that any health messaging is consistent with DoH advice and does not misinform or understate any potential or actual public health risk.

Refer to *'Appendix 6 – Example Media Statements'.*

8.2 Issuing a Public Health Media Statement

A public health media statement shall be issued for any wastewater overflow that appears to or is most likely to be a significant public health risk. An all-clear media statement shall also be issued after DoH confirmation of satisfactory bacterial sampling results for, water environment events, or response agency confirmation of adequate site remediation for land or built environment events.

8.3 Significant Environmental Risk

If DoH decides that the wastewater overflow is not a significant public health risk, it will defer to other response agencies (e.g. the WSP, DWER or DBCA) to act as the lead agency and to issue a media statement (as appropriate) to advise the public regarding the wastewater overflow into the environment.

In this situation, DoH shall support the lead agency issuing the media statement, by providing any precautionary public health advice or statements (as applicable).

8.4 Media Enquiry Protocol

Media enquiries shall be directed to the corresponding response agencies public affairs personnel. Primary responders at a wastewater overflow site, should not provide comment to, or engage in interview with television, or media crews, without prior approval from their respective agencies. Where prior approval has been obtained, it is recommended that only brief details of the event and planned response activities be provided.

When an individual or organisation is under investigation, only brief incident details shall be provided, and the response agencies shall state that an investigation is underway. Response agencies shall avoid referring to potential penalties or making any comment that may preclude the outcome of an investigation.

9. Confirmation of Clean-up, Disinfection and Remediation

9.1. Site Visit to Confirm Wastewater Overflow Remediation

Confirmation of site remediation to a satisfactory public health standard, will often (i.e. high, medium and some low public health risk level wastewater overflow events) require a site visit and in some instances a follow-up site visit by the LGA or lead agency as appropriate.

Note: DoH generally will only undertake site remediation inspection works in exceptional circumstances.

The purpose of the site visit is to ensure the following:

- Remediation has been conducted in accordance with the public health risk category as per Appendix 2 and Appendix 3;
- There are no remaining areas of wastewater or waste solids e.g. wastewater has been pumped out to sewer, and any waste solids have been disposed of to landfill, or in accordance with the *Environmental Protection (Controlled Waste) Regulations 2004* (as required);
- The appropriate response to the wastewater overflow event has been conducted for example:
  - Appropriate support provided to impacted occupant/s of property.
  - Alternative accommodation arranged for affected occupants (as required).
  - Soiled porous materials e.g. carpets, clothing, fabrics etc. are discarded to landfill.
  - IICRC supported remediation has been completed (as required).
  - Contaminated grass/soil areas replaced with clean equivalent (as required) etc.

10. Closing-out a Wastewater Overflow Event

10.1. Closing-out Wastewater Overflow - Water Environments

To close-out a wastewater overflow into a high or medium public health risk level water environment, the DoH will await for confirmation of satisfactory bacterial sampling results (Email to: ssalert@health.wa.gov.au).

DoH will then:

- Advise the WSP and relevant response agencies when satisfactory results have been received.
- Advise the WSP and relevant response agencies when to remove warning signs and physical barriers (where applicable).
- Issue a media statement to close-out a previously issued media health warning, to advise that impacted water environment is again suitable for its relevant or intended purpose.

10.2. Closing-out Wastewater Overflow - Land or Built Environments

To close-out a wastewater overflow event onto a land environment, or into a built environment, the responsible WSP, and the relevant LGA shall confirm in writing (email to ssalert@health.wa.gov.au), that the wastewater overflow site has been properly cleaned, disinfected and remediated to the set standards as outlined in Appendix 2 and Appendix 3.

Following confirmation, the DoH will:

- Advise the WSP and/or relevant response agencies when it is appropriate (see Section 10.3) to remove warning signs and physical barriers (where applicable).
- Issue a media statement to close-out a previously issued media health warning, to advise that the impacted land or built environment is again suitable for its relevant or intended purpose.

10.3. LGA/DoH to Confirm Warning Signs/Barrier Removal

The DoH will instruct the WSP or and the relevant LGA (when signs have been installed by the LGA) to remove the warning signs and/or physical barriers at the wastewater overflow site when the following has actions are confirmed:

- Impacted site has been adequately cleaned, disinfected and remediated (as appropriate);
- No wastewater and/or waste solids remain;
- An adequate warning sign/access restriction period at the impacted site has been applied.

Note: For impacted land areas, the access restriction period will be somewhere between 3–7 days.

10.4. Wastewater Overflow Debrief Meeting

The WSP or any response agency involved in a wastewater overflow event, may host a debrief meeting at the completion of the event, to discuss and address any issues identified, and to plan towards improvements related to notification, response, coordination, communication, management etc.

A debrief meeting may be convened with a clear agenda to cover key aspect of the incident for example in relation to the following reasons:

- A significant (high public health risk level and/or 'Media Sensitive') wastewater overflow event (whether into/onto a built, land or water environment);
- Perceived problem in understanding and/or fulfilment of WSP or response agencies responsibilities;
- New, or reoccurring issue or problem, and/or;
- Evolving, new or increased awareness for continuous improvement;

The WSP and response agencies shall consider and preferably implement debrief recommendations and improvement actions for future wastewater overflow events. The DoH will update these procedures from time to time (as appropriate) to incorporate response agencies decisions, recommendations, improvements, changes and/or additions for future implementation.

Appendix 1: Determining a Reportable Wastewater Overflow

Type of Environment	Wastewater Overflow Specific Discharge Environment	Reportable Wastewater Overflow Response Agencies				
		DoH	LGA	DWER		DBCA (Perth region only)
Built	**1.** Residential/Commercial/Public Building	Yes[1]	Yes	No (If not PDWSA)	Yes, Reportable if within Public Drinking Water Source Area[1] (PDWSA)	No
Environmental	**2.** Ground (road verge, public open space, front/backyard etc.)	Yes[1]	Yes[1]	Yes[1] (If ≥ 10m^3)		Yes[1] (If land forms part of Development Control Area)
Environmental	**3.** Unlined basin with no outlet	Yes[1]	Yes[1] (If LGA Basin)	Yes[1] (If ≥ 10m^3)		No
	4. Piped drainage system (contained in pipe and retrievable by tanker)	Yes[1]	Yes[1] (If LGA Asset)	No (If not PDWSA)		No
	5. Lined basin or emergency storage tank	No	No	No (If not PDWSA)		No
Water	**6.** Watercourse i.e. river, creek, tributary, ocean (Discharge is flowing or ponding)	Yes[1]	Yes[1]	Yes[1]		Yes[1] (if associated with Development Control Area)
	7. Lake, wetland, marsh, swamp	Yes[1]	Yes[1]	Yes[1]		
	8. Basin with outlet and wastewater can't be retrieved (may have flowed downstream)	Yes[1]	Yes[1]	Yes[1]		
	9. Dry watercourse, open drain or natural creek	Yes[1]	Yes[1]	Yes[1] (If ≥ 10m^3)		No

[1] The wastewater service provider (WSP) shall contact response agencies by EMAIL and/or PHONE (A.S.A.P – nominally within 30 mins to 2 hrs of a CONFIRMED wastewater overflow). If "Media Sensitive" notify immediately by PHONE- (nominally within 30 mins). **Note**: Nothing in these procedures removes the requirement for the WSP to comply with Sect. 72 of the EP Act or any condition of licence issued under the Act.

Appendix 2: Risk Matrix for Wastewater Overflows onto Land Environment

Wastewater Overflow Characteristics	Health Risk Level	Response Action
REMOTE or INACCESSIBLE to Public[1]	Very Low or Low	Recover wastewater as practicable **&** Consult LGA[5] &/or DoH
ACCESSIBLE to Public **&** No Sensitive people[2] **&/or** Impacting Hard stand areas[3] **&/or** Impacting Natural Land[4] **&/or** Pooling/ponding wastewater	Medium	Vacuum wastewater as practicable **&** Scrub & Disinfect impacted Hard stand surfaces[6] **&** Remediate impacted Natural Land[7] **&** Install Hard Barriers[8] **&** Consult LGA[5]
ACCESSIBLE to Public **&** Sensitive people[2] **&/or** Impacting Hard stand areas[3] **&/or** Impacting Natural Land[4] **&/or** Pooling/ponding wastewater **&/or** PDWSAs	High	Vacuum wastewater as practicable **&** Scrub & disinfect impacted hard-stand surfaces[6] **&** Remediate impacted Natural Land - further considerations[9] **&** Install Hard Barriers[8] **&** Consult LGA[5] **&/or** Sampling Analysis[10]

Note: This table provides a general guide for recommended remediation activities based upon potential public health-risk which is turn is based on the potential public wastewater exposure and the health sensitivity of individuals. Response action(s) by WSP do not need to wait for LGA Authorise Officer to be on-site. Final remediation is dependent upon discussions with the owner/ occupier of the impacted land and/or LGA Authorise Officer.

1 If a wastewater overflow occurs in a remote and or generally inaccessible land area where public access is unlikely (e.g. scrubby dense fringe type bushland, swamp etc), remediation measures may be limited in extent. This decision shall be made in consultation with the LGA and/or DoH.

2 Sensitive people include: the young < 4 yrs. of age, the elderly > 75 yrs. of age, pregnant women, and the immunocompromised (e.g., HIV patients, chemotherapy/cancer patients, congenitally immune-deficient, recent major surgery, compromised skin surfaces – wounds/cuts/abrasions, unvaccinated – tetanus/diphtheria boosters, Hep A, B etc.). When assessing risk consideration should be given to dogs, cats or other pets that could access wastewater impacted areas.
3 Hard-stand areas are low-porosity, hard surface areas with sloping to drainage e.g. cement or brick driveways, pathways, paved areas, carparks etc.
4 Natural land surfaces include all outdoor surface areas other than hard stand areas e.g. soil, sand, grassed area, garden bed etc.
5 Environmental Health Officer (EHO) as defined in Western Australia Government Gazette (West Australian Government Gazette 2017). For Medium and High-risk events, it is preferable (if practicable) for Authorised Officers to be onsite with first responders (i.e. WSP, licensed plumber, loss adjustor etc.). The WSP must consult the LGA Authorised Officer through this process. The LGA Authorised Officer/EHO evaluates the assigned public health risk level, and the response actions and determine when to: "remove barriers and open area for access".
6 Disinfect and Clean:
- Follow manufacturer's instructions and apply disinfectant to the entire surface of impacted area.
- Physically scrub hard-stand areas with suitable hard bristle brooms/brushes and running water.
- To the extent practicable, contain liquid run-off and dispose of appropriately.

7 For sand/soil areas: Consider (context dependent) removing impacted sand/soil to depth of wastewater seepage and replace with clean sand/soil.

For other areas (also where removal of sand/soil above is not practical)**:**
- Remove gross contamination;
- Liberally apply hydrated lime to total impacted surface area;
- Physically rake lime into soil (as practicable);
- Install barriers around perimeter of impacted area and retain for 3 - 7 days (context dependent). This allows for pathogen breakdown from UV light and natural degradation processes.
- Following barrier removal: Top-dress the impacted area with ~ 2 inches of clean fill.

8 High Visibility Safety Mesh Fence must be installed around the perimeter of the impacted natural land surface area. Fence is to remain installed for a period of 3 - 7 full days (context dependent) to allow for natural degradation of pathogens by UV light and other inhibitory factors.
9 For sand/soil areas:
- Remove impacted sand/soil to depth of wastewater seepage, and;
- Replace with clean sand/soil.
- Install barriers and retain for 3 - 7 full days (context dependent).

10 'Sampling Analysis' is driven at the request of the affected occupant or responsible agent of land. The financial cost for sampling and analysis is borne by the occupant or agent of land. Sampling may be undertaken by Restoration Contractors/Occupant utilising commercially available microbiological kits. Alternatively, sampling may be undertaken by an appropriately qualified and experienced professional (e.g. microbiologist, or LGA Authorised Officer, or other relevantly trained personnel).

Note: Outdoor, sampling results are difficult sensitive to interpret and may be inconclusive due to the ubiquitous number and concentration of microorganisms in soils. Therefore, sampling of the land environment is often considered of limited cost-benefit.

Appendix 3: Risk Matrix for Wastewater Overflows into Built Environment

Wastewater Overflow Characteristics	Health Risk Level	Response Action
Confined to wet areas[1] **&** < 24 hrs from onset[2] **&** No Sensitive occupants[2,3]	Very Low or Low	Cleaning and disinfection by Owner/Occupier **OR** Cleaning Contractor **&** Customer Support Factsheet Provided by Wastewater Service Provider
Not confined to wet areas[1] **&** Impacting only non-porous surfaces[5] **&** **<** 24 hrs from onset[2] **&/or** Sensitive occupants[2,3]	Medium	***Consider alternative accommodation*** **&** Provide Customer Support Factsheet **&** Engage Restoration Contractor[4] **&** Consult LGA[7]
Not confined to wet areas[1] **&** Pooling wastewater - multiple rooms **&/or** Impacting Semi-Porous/Porous surfaces[5] **&/or** **>** 24 hrs from onset[2] **&/or** Sensitive occupants[3]	High	***Consider alternative accommodation*** **&** Provide Customer Support Factsheet **&** Engage Restoration Contractor[4] **&** Consult LGA[7] **&/or** Perform Sampling Analysis[6]

Note: This table provides a general guide for recommended remediation activities based upon the potential health-risk level. Final remediation is dependent upon discussions with the owner/occupier of impacted property, the WSP and/or the LGA Authorised Officer. Response action(s) by WSP do not need to wait for LGA Authorise Officer to be on-site.

1 Non-porous, hard surface areas with sloping to drainage e.g. tiled bathrooms, toilet, laundry etc.

2 If sensitive occupants are present, and/or > 24 hrs has elapsed since wastewater overflow onset, health risk level advances to next response action level.

3 Sensitive occupants are: the young < 4 yrs. of age, the elderly > 75 yrs. of age, pregnant women, and the immunocompromised (e.g., HIV patients, chemotherapy/cancer patients, congenitally immune-deficient, recent major surgery, compromised skin surfaces – wounds/cuts/abrasions, unvaccinated – tetanus/diphtheria boosters, Hep A, B etc.).

4 Restoration contractors certified in ANSI/IICRC S500 Standard and with minimum training as a Water Damage Restoration technician. **At least one trained and certified restorer must be onsite for standard to be met.** Equivalently trained personnel may be acceptable for regional/remote locations. Evidence of suitability may be requested.

Note: WSP to conduct preliminary remediation to reduce further damage to impacted property surfaces.

5 Porous surfaces are classified according to permeance factor (See Appendix 9).

6 Sampling Analysis at the request of the affected owner/occupier or at the discretion of the LGA. Financial cost for sampling analysis is borne by owner/occupier. Sampling analysis may be undertaken by Restoration Contractors/Occupant utilising commercially available microbiological kits. Alternatively, sampling may be undertaken by an appropriately qualified and experienced professional (e.g. microbiologist, LGA Authorised Officer, or other relevantly trained personnel).

Note: If restoration is conducted to S500 Standard, this should, in most instances remove the need for Sampling Analysis.

7 Environmental Health Officer as defined in Western Australia Government Gazette (West Australian Government Gazette 2017). For Medium and High-risk events, it is preferable (if practicable) for LGA Authorised Officer/EHO to be onsite with first responders (i.e. WSP, licensed plumber, loss adjustor etc.). The WSP must consult the LGA Authorised Officer through this process. The LGA Authorised officer evaluates the assigned public health risk and response actions and makes the final decision of the property as “Fit for Habitation”.

Appendix 4: Notifiable Wastewater Overflow Information

Information	Criteria/Examples
Minimum Reporting Requirements	
Media Sensitive:	*Yes/No*
Date and Time of Wastewater Overflow	
Name of person notifying:	
Phone/Email:	
Event Location (Address):	*Property No., Street Name, Suburb, Water Body/Park/Reserve Name*
Local Government Authority (LGA):	
Wastewater Overflow Discharge Point:	*Access Chamber, Inspection Shaft, Overflow Relief Gully, Sewer Main etc.*
Receiving Environment Category:	*Land, Water, or Built Environment*
Receiving / Impacted Environment:	*E.g. Bathroom, Bedrooms, Inc., Backyard, Patio Area, Shed, Garage, Swimming Pool, Front-yard, Verge, Road, Drain, Bush, Sand, Park, Paddock, Reserve, Vacant Land, Beach, Creek, River, Lake, Ocean etc.*
Cause of Wastewater Overflow:	*(Blockage - Fat, Rags, Roots etc.), Pipe Rupture etc., Electrical/Equipment Fault/Failure - Pump etc., Weather - Heavy Rainfall etc.*
Type of Wastewater Overflow:	*Untreated, Treated WW etc.*
Approximate Volume. (L/kL):	
Brief Description:	
Proposed Remedial Actions:	*Clear blockage, recover WW, remove/replace impacted sand/soil, clean and disinfect, signage, sampling, repair/replace infrastructure etc.*
Temp. Assigned Health Risk Level:	*Very Low, Low, Medium, High*
LGA/Environmental Health Officer Notified:	*Yes/No*
Additional Information (if known)	
Estimated Wastewater Recovery Volume. (L/kL):	
Wastewater Overflow Discharge/Impact Detail/Status:	*Carpeted Areas/ Porous Surfaces, Pooling WW - Contained, Recovered, Infiltration, Evaporation etc.), Flowing Drains, Water Body, Dilution, Fish-kill etc.*

Additional Information for Water or Land Environment	
Public Access/Potential Accessibility:	*Yes/No & Comments (see Note 1, Appendix 2)*
Extent of Wastewater Overflow Impacted Areas:	*Describe WW Coverage/Area etc.*
Estimated Wastewater Overflow Duration (Hrs):	
Est. Combined Stormwater and Wastewater Volume. (kL):	*Calculate for heavy rainfall events*
Within a DWSPA?	*Yes/No*
Information for Built Environment	
Affected Property Area:	*Internal or External or both*
Sensitive individuals:	*Specify (see Note 2, Appendix 3)*
Pets/domestic animals:	*Yes/No*
Loss Adjustor and/or Customer Service Attendance:	*Yes/No*
Licensed Plumbers Attendance:	*Yes/No*
DoH Customer Support Factsheet provided:	*Yes/No (Appendix 10)*
Alternative Accommodation arranged:	*Yes/No*
IICRC Restoration Company Engaged/Confirmed:	*Yes/No*
Impacted Ground/Surface/Area Type:	*Hard Stand Surfaces/Areas (Paving, Concrete, Bitumen, Tiles, Floorboards etc.), Carpets, Garden beds, Grass, Sand, Gravel, Swimming Pool, Beach etc.)*
Within a PDWAS?	*Yes/No*

Appendix 5: EP Act Section 72 Waste Discharge Notification Form

Office use only
Licensing officer Click here to enter text.
Date received Click here to enter text.
Accepted as complete Click here to enter text.
Department reference Click here to enter text.

Government of **Western Australia**
Department of **Water and Environmental Regulation**

Environmental Protection Act 1986

Section 72 Waste discharge notification

To: Chief Executive Officer Attention: Click here to enter text. **Telephone notification to 1300 784 782**	Department of Water and Environmental Regulation Locked Bag 33 Cloisters Square PERTH WA 6850

Discharge of waste from:	☐ premises ☐ vehicle Name of premises/vehicle: Click here to enter text. Town/suburb: Click here to enter text.
The following notification and information is provided in accordance with s 72 (1) of the *Environmental Protection Act 1986* (EP Act):	
Licence or works approval number	(If applicable, type in your EP Act licence or works approval number.)
Relevant condition	(If this notification is a requirement under a licence, works approval or pollution abatement notice, type in the relevant condition or measure.)
Description of operation or equipment	(If any of the above two blocks were not filled, please type a brief description of your operation and/or the equipment that malfunctioned.)
Description of incident	(Describe the cause of waste discharge.)
Prescribed details of discharge of waste under regulation 5K of the *Environmental Protection Regulations 1987*:	
Date of incident:	DD/MM/YY **Time:** Click here to enter text. Choose an item.

Address/location:	☐ Map attached of the premises to this notification showing the location of the discharge and the impacted area
Name of person responsible for discharge of waste	(Name of person operating the equipment that resulted in, or otherwise responsible for, the discharge of waste.)
Composition of waste	Click here to enter text.
Quantity of waste discharged	Click here to enter text.
Environmental impact	Did the discharge cause pollution? ☐ Yes ☐ No (If yes, describe the nature and extent of the pollution or environmental impact.) ☐ Map attached to this notification indicating discharge point and impacted area
Remedial action	(What action is to be taken to minimise the effect on the environment from the discharge of waste? Who coordinated this action?)
Waste removal	(Is the waste involved to be removed, dispersed, destroyed, disposed of or otherwise dealt with? If so, in what manner and where to?)

Name of reporter:	Click here to enter text.
Job title:	Click here to enter text.
Contact number:	Click here to enter text.
Organisation:	Click here to enter text.
Date:	Click here to enter text.

Please complete this form and attach to an email along with map of discharge point and send the completed form and map to pollutionwatch@dwer.wa.gov.au.

Appendix 6: Example Media Statements

Caution advised after [Insert Suburb/Location] sewage spill

The [Insert agency name] is warning people not to swim, ski, kayak or fish (including crabbing or shellfish collection) or participate in other recreational activities in a section of the [Insert water body name] in [Insert suburb name/location], after sewage was found to be flowing into the [Insert water body type] as a result of [Insert cause/reason for wastewater overflow].

[Insert agency spokesperson's position & name] said the sewage had spilled into a section of the [Insert water body type] along [Insert street name and other location/landmark details].

"We are reminding people that direct water contact activities, including fishing and the collection and eating of shellfish from the [Insert water body name], particularly from this section may lead to and cause illness," [spokesperson] said.

"Farmed shellfish purchased in supermarkets and other commercial outlets in WA are not affected because there is a strict quality assurance program to ensure they are safe for human consumption."

[Insert agency spokesperson's name] said action is being taken to repair the [Insert the equipment/cause/reason responsible for the wastewater overflow], however people should still avoid contact with the water until further notice.

"Ingestion of the water could result in diarrhoea and vomiting and anyone experiencing these symptoms should visit their doctor."

[Insert agency spokesperson's name] said the [Insert agency name] have collected water samples and warning signs are being erected along this section of the [Insert water body type] to alert the public.

The [Insert agency name] is working with the [Insert agency name] to monitor water quality in the area and encourages the community to report any activities which may be harmful to the [Insert water body type] and shorelines by calling the office on [Insert contact number] or the emergency after hours hotline on [Insert contact number].

Media inquiries: [Insert contact number]

[Insert Location] sewage spill disperses

The all-clear for swimming, fishing and other recreational activities in the section of the [Insert water body name] at [Insert specific street name & suburb] following a recent sewage spill.

[Insert Agency Name] [Insert agency spokesperson's position & name] said water quality tests had revealed that there were [elevated] bacteria levels on the [Insert day] of the sewage spill, but further water quality reports have since returned satisfactory bacterial levels at normal levels.

(Optional statement) The reduction in bacteria levels has been assisted by recent fine weather conditions, winds and tide to assist in UV irradiation, water mixing and dilution to negate the elevated bacterial water quality impacts experienced over the past few days.

"Warning signs advising people not to take part in direct water contact activities in the affected area have now been removed" [Insert agency spokesperson's name] said.

"We are waiting for an incident report from the [Insert Responsible Agency Name] but it's believed the spill occurred because of a [Insert Cause/Reason for wastewater overflow].

"It's estimated that about [Insert quantity of wastewater overflow] of sewage overflowed into the river from [Insert structural terminology e.g. "from access chamber"].

As a general guide, the Department of Health does not recommend swimming in in fresh to estuarine waters for up to three days after heavy rainfall as rainfall can flush bacteria, nutrients and other contaminants from the surrounding catchment into the water.

For further information on bacterial water quality visit Healthy WA:

Natural Waterways

Beach grades for Western Australia

The [Insert agency name] encourages the community to report any activities that may be harmful to the [Insert water body type] and shorelines by calling the office on [Insert agency information contact number] or after-hours on [Insert agency information contact number].

Media Contact: [Insert contact number]

Appendix 7: Warning Signs

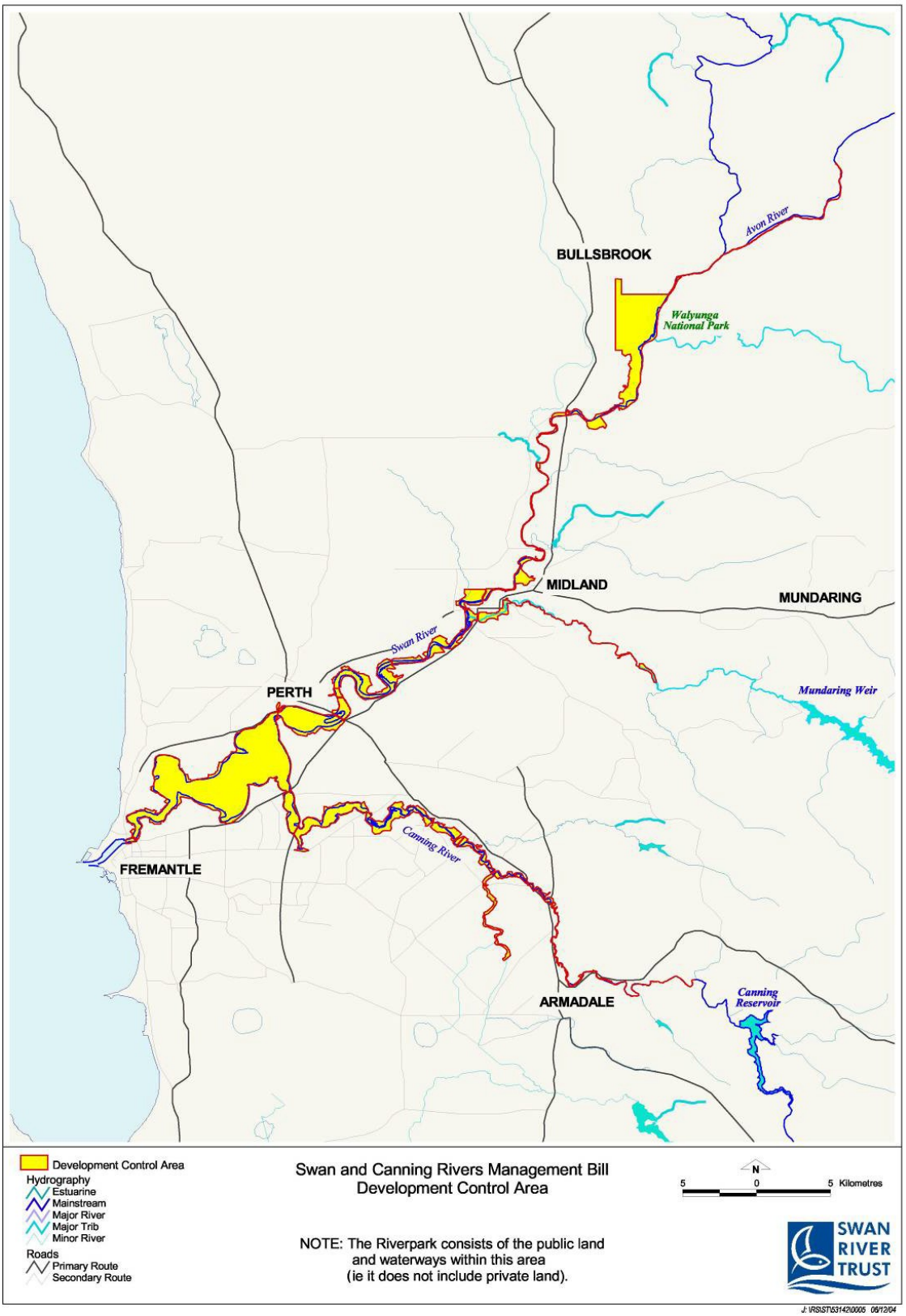
The following generic warning sign templates are examples of the type of warning signs to be erected, when a wastewater overflow occurs onto a land area, or into a water environment .

Response agencies that have responsibility for erecting warning signs for a wastewater overflow, can obtain generic warning sign templates by emailing DoH: ssalert@health.wa.gov.au. These templates may be modified to include individual agency logos and contact numbers (as appropriate), but a copy of the modified template shall be emailed to DoH for reference.

Note: WSPs and LGAs shall ensure that they have enough warning signs to be erected in the event of a wastewater overflow. DoH has a limited stockpile of warning signs that can be made available for emergency situations where extra signs are required.

Appendix 8: Map of Swan Canning Development Control Area

A more detailed map of the DBCA Development Control Area with 26 individual section maps can be downloaded from the DBCA website.



Appendix 9. Porosity Guide for Built Environment Wastewater Overflow

Highly porous (permeance factor >10 - absorb or adsorb water quickly)

Materials that have been exposed to sewage overflow and have a value that exceeds the cost of restoration such as high-value rugs or carpets, upholstery and other textiles, should be removed and restored off site. Highly porous materials with low cost e.g. cushions, carpets, cardboards, soft toys etc. should be removed and discarded as soon as possible.

Other materials, such as saturated mattresses and cloth upholstery, regardless of value, cannot be restored and should be discarded. If disposal is necessary, these materials should be bagged in plastic for removal to a proper disposal site.

Semiporous (permeance factor >1 to 10 – absorb or adsorb water slowly)

Materials, including items such as linoleum, vinyl wall covering and upholstery, and hardboard furniture, along with construction materials such as wood, painted drywall, and plaster, should be properly cleaned, disinfected, or removed and replaced as part of the initial restoration process.

Nonporous (permeance factor ≤1 – do not adsorb or absorb moisture easily)

Materials such as FormicaTM, linoleum, vinyl, and tiles can be inspected for subsurface contamination with a non-penetration moisture meter. Although these materials may be rated as nonporous, they must be evaluated carefully because contamination can migrate from the perimeter and become trapped below the surface. If migration of contamination below the surface has not occurred, these materials may be fully restored.

Note: If highly porous or semi-porous materials are to be restored for reasons of sentiment, finance or otherwise, the recommendation is to engage an IICRC certified firm or appropriate professional for their restoration, including post-remediation assessment.

Appendix 10. Customer Support Factsheet for Built Environment Wastewater Overflow

Government of **Western Australia**
Department of **Health**

Sewage Overflows into Buildings – Support Factsheet

This document provides advice to **members of the public** whom have been affected by sewage overflows into buildings. Information provided includes the health risks that exist and the evidence-based protocols that are required to return the building to a safe standard.
Note - Further detailed information can be found on the following web-link (i.e., outdoor spills, legislative requirements etc.):

Key Advice

- KEEP PEOPLE AND PETS AWAY from the impacted area and DO NOT TOUCH sewage impacted surfaces until remediation is completed.
- A HEALTH RISK ASSESSMENT will be conducted by Wastewater Service Provider (WSP) representatives and/or other responders to decide on the most appropriate actions
- If a Medium or High-Risk event has been declared, ensure an IICRC Certified Company or equivalent undertakes clean-up AS SOON AS POSSIBLE (**IICRC website** lists certified companies)
- Arrange alternative accommodation for High Risk events and strongly consider for Medium-risk events. Only return to property upon completion of remediation.
- Contact your insurance company and/or property manager to inform them of the event and understand your protections (Building and Contents insurance policies may be separate)
- Document the event with video or photographic footage as evidence
- RENTAL PROPERTIES - tenants have protections under the Residential Tenancy Act to be provided with clean and sanitary living conditions *(Residential Tenancy Agreement Form)*
- Contact your Local Government Environmental Health Officer for further advice and support

What are the hazards in sewage?

Sewage can contain:

Pathogens (disease causing organisms such as viruses, bacteria, protozoa or other microorganisms). Most of the health effects associated exposure to sewage can be attributed to pathogens.

Chemical hazards. Sewage may also contain harmful substances from trade waste or industrial and commercial facilities, such as certain solvents, organic chemicals and heavy metals.

These pathogenic and chemical hazards can pose a health and safety risk to exposed individuals if not managed in a safe manner. The two primary routes of exposure are skin contact or inhalation. The primary affected areas by inhalation include the nose, throat and upper respiratory tract. Secondary areas are the eyes and lower respiratory tract, or any part of the body contacted or splashed by sewage. If hands become contaminated, there is an increased risk of ingestion via hand to mouth transmission.

What is the response to an internal sewage overflow event?

The typical response involves three primary steps:

1. Pre-remediation
   - Attendance to impacted property by WSP representatives, Licensed Plumber, Loss Adjustor (Insurance) and Environmental Health Officer
   - Blockage is cleared
   - **Health Risk Assessment** is conducted *(Very Low/Low/Medium/High Risk)*
   - Owner/Occupant or WSP to complete cleaning and disinfection (*(Very low, Low risk)*
   - Provision of temporary accommodation for impacted occupants *(High or Medium risk)*
   - Preliminary clean-up is conducted by WSP
2. Remediation (IICRC Restoration Company) – *Medium and High Risk*

- Cleaning and Drying
- Disinfection

3. Post-remediation
   - Monitoring – Visual inspection, Moisture assessment, and in some instances Sampling, Final decision – "Building is declared fit for habitation"
   - Return of occupants to property *(High and/or Medium risk)*

Who is responsible for the event?

Owners/Occupiers are responsible when a wastewater overflow is caused by faults/blockages from on-site wastewater systems or blockages in plumbing infrastructure within the property boundary.

Wastewater Service Providers are responsible for wastewater overflows caused by faults/blockages in sewerage infrastructure located outside the property boundary (after connection to the sewerage reticulation system).

Note: Partial responsibility may apply if **Overflow Relief Gully** does not conform to design requirements as set in **Plumbing Code and AS/NZ3500.2:2018** (as determined by Licensed Plumber).

If Overflow Relief Gulley is found to be defective, Environmental Health Officer and/or Plumber will advise Owner/Occupier on works required.

What are the suggested remediation practices?

The aim of the restoration process is to return the impacted property to a state and condition that existed prior to the event occurring.

For **Medium and High-Risk events**, advice is to engage the professional services of an IICRC certified company. Restoration personnel employed by these companies have the relevant training, experience and equipment to return the impacted property to an appropriately safe standard.

Cleaning and Drying

- In any clean-up scenario strict safety protocols must be followed, including but not limited to:
  - Switch off electricity if the affected area contains electrical appliances, fixtures, cable etc.
  - Keep occupants, sensitive individuals and pets away from contaminated area. Sensitive individuals include the young, elderly, individuals with compromised skin i.e. open cuts and wounds, and immuno-compromised individuals i.e. cancer patients etc.
  - Only enter contaminated area for inspection and remediation once appropriate. **Personal Protective Equipment (PPE)** is worn (as deemed necessary) i.e. disposable protective coveralls including hood and booties, long pants, long sleeve shirt, rubber boots, rubber gloves, face mask/respirator and safety glasses
- Cleaning and drying protocol (not necessarily in sequence), including but not limited to:
  - If practical, feasible and safe, quarantine contaminated loose contents (e.g., toys, rugs, carpet, furniture, bookshelves etc.) by removing from building and isolating.
  - The porosity of items generally determines whether it may be restored. Certain soft contents (e.g., soft toys, carpet, mattresses and the like) cannot be safely restored.
  - Remove the gross contamination, which includes the wastewater and associated organic materials, by using wet vacuum extraction units, mops, squeegees, towels etc.
  - **Pay careful attention** to hard to reach places, such as cracks and crevices, wall cavities, beneath floorboards etc. Dispose of cleaning equipment after use.
  - **Employ drying methods** to reduce moisture levels of surfaces and materials to 'ideal standards' (i.e. 'natural' moisture level of material - professional advice may be required). **Pay careful attention** to hard to reach places (as above).

Disinfection

- Throughout the cleaning and drying process, all impacted surfaces must be disinfected using hospital grade disinfectants with specific biocidal claims that are listed on the **Australian Register of Therapeutic Goods**. This ensures the optimal reduction of pathogens.
- Careful attention must be made to the manufacturer's instructions and information provided within the Safety Data Sheet. This provides key guidance on optimal disinfectant application.

Is there a formal complaints process?

WSP, through their obligations under the Water Services Act 2012, are required to make available a formal complaints process to all customers.

If impacted parties are dissatisfied with any aspect of the response to a wastewater overflow event, they may proceed through the following complaints procedure (service provided free of charge):

1. Lodge complaint with WSP initially to attempt resolution

   Water Corporation (as Western Australia largest provider)

   - Phone: 13 13 75 (24 hours, 7 days a week) ***or***

- Online form, Customer Complaint Resolution

Note: It is a requirement for the licensed WSP to resolve a complaint within 15 business days, starting from the day the complaint was received.

2. If unable to resolve with WSP, lodge complaint to Ombudsman

Energy and Water Ombudsman Western Australia

- Phone: (08) 9220 7588 / 1800 154 004 (toll free from landlines) **or**
- Email: **energyandwater@ombudsman.wa.gov.au**
- Further information: http://www.ombudsman.wa.gov.au/energyandwater/

What symptoms could be related to sewage exposure?

Occupants/visitors of an affected property should visit a medical practitioner if they present with one or more of the following symptoms:

fever

nausea or vomiting
diarrhoea

symptoms of breathlessness, chest tightness and wheezing

redness and pain of the eyes

skin rash and/or pain and/or any other unusual symptoms

Make sure to tell your doctor that you have been involved with a wastewater overflow

More information:

Water Unit
Environmental Health Directorate
Department of Health
PO Box 8172
PERTH BUSINESS CENTRE WA 6849

Telephone: (08) 9388 4999
Fax: (08) 9388 4910
Website: www.public.health.wa.gov.au

Government of **Western Australia**
Department of **Health**

This document can be made available in alternative formats on request for a person with a disability.

healthywa.wa.gov.au

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Wastewater Overflow Health Assessment Checklist for Local Government

Appendix 11. Local Government Wastewater Overflow Checklist

Address / Location / Location Name: _____

Wastewater Overflow (WWO) Date:_/____/_____ WWO Time:___:____ Inspection Date:__/____/ _____

Site Visit / Inspection undertaken by: _____

Local Government: _____

Q.	GENERAL - INTRO	Yes	No	Further Instructions	COMMENTS / NOTES / ACTIONS
1	Is the wastewater overflow (WWO) volume and extent as initially notified?			If **NO**, Detail/ describe →	Revised Est. WWO quantity: Describe revised WWO Extent:
2	Has the cause of the WWO been identified/confirmed?			If **YES**, Detail/ describe →	Detail:
3	Is the WWO composition raw sewage (untreated wastewater)?			If **NO**, Detail/ describe →	e.g. treated/ disinfected:
Q.	**BUILT ENVIRONMENT**	**Yes**	**No**	**Further Instructions**	**COMMENTS / NOTES / ACTIONS**
4	Has the WWO impacted a Built Environment?			If **NO**, go to **Q.41**	
5	Has a licensed plumber attended the WWO site?				
6	Is the overflow relief gully (ORG) in working order?			If **NO**, Detail/ describe → *Incorrect design/ installation requires licensed plumber.*	
7	Does the owner/occupier need to fix or replace any private plumbing infrastructure? e.g. ORG etc.			If **YES**, Detail/ describe → **Clarify**, *who is responsible for fixing (owner/ occupier or wastewater service provider).*	
8	Does the property owner/occupier have building and/or contents insurance?			If **YES**, Detail/ describe →	
9	Has the owner/occupant been provided with relevant information?			If **NO**, ensure occupant is aware of potential health risks and received '*DoH's Supporting Information Factsheet* '. (Appendix 10)	

Wastewater Overflow Health Assessment Checklist for Local Government

Q.	BUILT ENVIRONMENT	Yes	No	Further Instructions	COMMENTS / NOTES / ACTIONS
10	Are there any health sensitive occupants?			If **YES**, Detail/ describe → *May require 'Alternate Accommodation' until remediation complete.*	
11	Are pets/domestic animals present?				
Q.	**Built Environment - EXTERNAL Areas**	**Yes**	**No**	**Further Instructions**	**COMMENTS / NOTES / ACTIONS**
12	Is the WWO impacting external areas?			If **NO**, go to **Q.22**	
13	List / describe the external areas / surfaces etc. that have been impacted by wastewater? Note any issues or concerns.			If **YES**, Detail/ describe →	
	Pooling Wastewater				
14	Is there any pooling wastewater?			If **YES**, Detail locations, estimate quantity, photo's etc. Determine/ confirm appropriate actions *e.g. vacuum, isolate area etc.* →	
15	What is the estimated time pooling wastewater has remained before clean-up / recovery was undertaken?				
16	What is the condition of the affected ground areas e.g. saturated, pooling remaining, evaporation etc.? *As appropriate, determine / confirm further remediation / measures necessary to reinstate area to prior condition and/or make safe. e.g. soil removal and/or treatment, replacement etc.*				
	Solid Waste				
17	Is there any visible solid waste material or solid waste remnants?			If **YES**, Describe/ detail →	*Describe affected areas, type e.g. paper etc., quantity, disposal.:*

Wastewater Overflow Health Assessment Checklist for Local Government

Q.	Built Environment - EXTERNAL Areas	Yes	No	Further Instructions	COMMENTS / NOTES / ACTIONS
	Swimming Pool				
18	Is a swimming pool impacted by the WWO?			**Go** to **Q.20**	
19	Has a professional cleaning company been organised to clean pool? E.g. flocculation, super- chlorination e.g. 10mg/L + holding time (2 days)			If **YES**, State Company Name: →	*Company name:*
				If **NO**, Advise / direct: →	*Details of Direction issued:*
20	Are there any external areas that require further clean-up, remediation &/or disinfection e.g. saturated soils, grass/lawn areas, patio/paving, garden areas etc.?			If **YES**, Describe/ detail: →	*Describe affected areas, condition, necessary works etc.:*
	Sampling				
21	Has sampling of impacted surfaces, areas and/or swimming pool been requested and/or undertaken? **Note: NOT MANDATORY**.			If **YES**, Detail/ describe etc. →	
Q.	**Built Environment - INTERNAL Areas**	**Yes**	**No**	**Further Instructions**	**COMMENTS / NOTES / ACTIONS**
22	Is the WWO impacting internal areas?			If **NO**, go to **Q.41**	
	Minimal Impact				
23	Is wastewater minimal, impacting ONLY '*Easy to clean areas* ' e.g. toilets, bathrooms, laundries, and non-carpeted hallways (tiled / non-porous materials)?			If **YES**, Detail/ describe → Go to **Q.27**	*Confirm adequate cleaning & disinfection method undertaken:*
	Moderate Impact				
24	Is wastewater moderate**,** impacting '*Easy to clean areas* ' and/or ONLY 1 Bedroom and/ or Office etc.?			**If YES**, Detail/ describe → Go to **Q.26**	*Detail the extent and impact of areas affected. Photo's etc.*
	Extensive Impact				
25	Is wastewater extensive**,** impacting multiple areas including **bedrooms, main living** and/or **kitchen** areas etc., that make it unsafe/ impractical for the property owner/occupier to remain in the premise during clean-up and remediation?			If **YES**, Detail/ describe → **Discuss** *'Accommodation - Alternate arrangements'.* **Advise** &/or **Direct** Property Owner (as appropriate) →	*Detail the extent and impact of areas affected. Photo's etc.*
					Details of Direction issued:

Wastewater Overflow Health Assessment Checklist for Local Government

Q.	Built Environment - INTERNAL Areas	Yes	No	Further Instructions	COMMENTS / NOTES / ACTIONS
	Extensive Impact				
26	Has an approved professional restoration company been engaged to undertake water damage restoration and disinfection for medium or high-risk events?			If YES, State company name. → If **NO**, **Advise** &/or **Direct** Property Owner (as appropriate). →	*Company name:* *Details of Direction issued:*
	Gross Contamination				
27	Has all gross contamination and pooling areas of wastewater been removed?				
28	Is there any evidence of wastewater intrusion in hard to reach places? e.g. cracks, crevices, wall cavities, beneath floorboards etc.			If **YES**, Confirm / Detail →	
	Moisture Assessment				
29	Has a moisture assessment of impacted wastewater areas been undertaken? Instruments e.g. *moisture meter, thermometer, hygrometer, psychrometer or thermal imaging camera.*			If **YES**, Confirm/ Detail. → If **NO**, Advise or direct →	
	Highly Porous				
30	Has the WWO impacted any highly porous surfaces, areas or materials? *e.g. carpets, rugs, soft woods, furniture, clothing, mattresses etc.*			If **YES**, Confirm / Detail. → If **NO**, go to **Q.32**	
31	Has highly porous wastewater impacted materials / items been removed and disposed to a waste refuse facility? *Note: professional offsite cleaning for sentimental items may be required.*				
	Semi-Porous				
32	Has the WWO impacted any semi-porous surfaces, areas or materials? *e.g. linoleum, vinyl wall covering / upholstery, wood, painted drywall, plaster etc.*			If **YES**, Confirm / Detail. → If **NO**, go to **Q.34**	
33	Has semi-porous wastewater impacted materials / items been cleaned and disinfected or replaced?				

Wastewater Overflow Health Assessment Checklist for Local Government

Q.	Built Environment - INTERNAL Areas	Yes	No	Further Instructions	COMMENTS / NOTES / ACTIONS
	Non-Porous				
34	Has the WWO impacted any non-porous surfaces, areas or materials? *e.g. FormicaTM, linoleum, vinyl, tile finishing materials etc.*			If **YES**, Confirm / Detail. If **NO**, go to **Q.36**	
35	Has non-porous wastewater impacted materials / items been cleaned and disinfected or replaced?			If **NO**, Advise &/or Direct →	
	Drying & Aeration - Within 24 Hours				
36	Were affected wastewater surfaces and areas dried and aerated within 24 hours of the WWO?			If **NO**, *Increased contamination / health risk.* Determine need for professional cleaning/remediation. **Advise** &/or **Direct** →	
	Disinfection				
37	Has disinfection (hospital grade) of all impacted surfaces and areas being undertaken in accordance with manufacturer instructions?			If **NO**, Advise or Direct. →	
	Sampling				
38	Has sampling **(NOT MANDATORY)** of impacted surfaces, areas and/or swimming pool been requested and/or undertaken?			If **YES**, Detail/ describe etc. →	
39	Is any additional clean up remediation required?			If **YES**, Detail/ describe etc. →	
40	Any additional comments?				
Q.	**LAND ENVIRONMENT**	**Yes**	**No**	**Further Instructions**	**COMMENTS / NOTES / ACTIONS**
41	Has the WWO impacted a land environment?			If **NO**, go to **Q.64**	
	Low Use/Access				
42	Is the WWO limited to a low use/access area e.g. bushland, farm, (drain, comp basin - non-recreational water) etc.?			If **YES**, go to **Q.46**	

Wastewater Overflow Health Assessment Checklist for Local Government

Q.	LAND ENVIRONMENT	Yes	No	Further Instructions	COMMENTS / NOTES / ACTIONS
	High Use/ Access &/or Sensitive Population				
43	Has the WWO impacted a high use/access area e.g. verge, path, road, park, oval?			If **YES**, Detail/ describe → *Ensure warning signs / barriers.*	
44	Has the WWO impacted a high use/access area / sensitive population e.g. school area, playground, sandpit etc.? *i.e. Are health sensitive population likely to be exposed?*			If **YES**, Detail/ describe etc. →	
	Barriers, Traffic Management Etc.				
45	Is barrier mesh, bunting, traffic management etc., utilised to restrict / minimise public exposure in high use/ access wastewater impacted areas? *(Steps 3b, 3c & 5h)*			If **YES**, Detail/ describe → If **NO**, Advise &/or Direct →	
	Pooling Wastewater				
46	Is there any pooling wastewater?			If **YES**, **Detail** locations, estimate quantity, photo's etc. **Confirm / Determine** appropriate actions *e.g. vacuum, isolate area, warning signs etc.* → If **NO**, go to **Q.48**	
47	What is the condition of the affected ground areas e.g. saturated, pooling remaining, evaporation etc.? *As appropriate, determine / confirm remediation / measures necessary to reinstate area to prior condition and/or make safe. e.g. soil removal and/or treatment, replacement etc. (Steps 5c, 5e, 5f & 5h)*				
	Solid Waste				
48	Is there any visible solid waste material? *Ensure disposal to landfill if less than 200kg.* (Step 5b).			If **YES**, Detail/ describe →	
	Warning Signs				
49	Are warning signs required?			If **NO**, go to **Q.52**	
50	Have warning signs been erected?			If **NO**, Advise or Direct. →	
51	Is there an adequate number of warning signs erected at appropriate intervals? *Confirm additional signage (6.2)*			If **NO**, Advise or Direct. →	

Wastewater Overflow Health Assessment Checklist for Local Government

Q.	LAND ENVIRONMENT	Yes	No	Further Instructions	COMMENTS / NOTES / ACTIONS
	Hard-stand Surfaces				
52	Has the WWO impacted hard-stand surfaces?			If **NO**, go to **Q.54**	
53	Has cleaning & disinfection of impacted hard stand surfaces been undertaken? *(Refer to Step 5d & Appendix 2).*			If **NO**, Advise or Direct. →	
	Sand/Soil Areas				
54	Has the WWO impacted sand/soil areas? *Remediation Steps 5c & 5f.*			If **YES**, Detail/ describe → If **NO**, go to **Q.58**	
55	Is removal of impacted sand/soil considered practical / necessary? i.e. heavily saturated, sensitive use/high access areas.			If **YES**, Detail/ describe → If **NO**, go to **Q.58**	
56	If removal of impacted sand/soil was/is necessary, has it been removed to the depth of seepage and replaced with clean sand/soil?			If **NO**, Advise or Direct. →	
57	Have barriers been erected around the perimeter of the impacted sand/soil area? *Retain for 3-7 days (context dependent).*			If **NO**, Advise or Direct. →	
	Natural Land Surfaces				
58	Is the WWO impacting other natural land surfaces e.g. sand, grass, gardens etc.? *Remediation - 5c, 5f & 5h.*			If **YES**, Detail/ describe → Go to **Q.63**	
59	Has all gross contamination been removed?			If **NO**, Advise or Direct. →	
60	Has hydrated lime been liberally applied to the impacted surface area and raked into soil (as practicable)?			If **NO**, Advise or Direct. →	
61	Have barriers been erected around the perimeter of the impacted area? *Retain for 3-7 days (context dependent).*			If **NO**, Advise or Direct. →	
62	Following warning sign removal has the impacted area been top-dressed with ~ 2 inches of clean fill?			If **NO**, Advise or Direct. →	
63	Any additional comments?				

Wastewater Overflow Health Assessment Checklist for Local Government

Q.	WATER ENVIRONMENT	Yes	No	Further Instructions	COMMENTS / NOTES / ACTIONS
64	Has the WWO impacted a water environment?			If **NO**, Go to **Q.86**	
65	What type of water environment has been impacted e.g. ocean, river, creek, lake etc.? Detail				
	Visual Pollution Impacts				
66	Are there any notable water pollution impacts e.g. discolouration, fish-kill etc.?			If **YES**, Detail/ describe *e.g. distance, area, location, number, photos etc.* →	,
	Recreational Activities				
67	Is the water environment popular for recreational activities and number of visitors etc.?				
	Passive				
68	Is the water environment only utilised for passive recreation e.g. walking, birdwatching etc.?			If **NO**, Go to **Q.71**	
	Primary Contact				
69	Is the water environment utilised for primary contact recreation e.g. swimming, diving, jet-skiing etc.?			If **YES**, Detail recreational water activities. →	
	Secondary Contact				
70	Is the water environment utilised for secondary contact recreation only e.g. wading, kayaking, fishing etc.?			If **YES**, Detail recreational water activities. →	
	Water Dilution/Mixing				
71	What water dilution / mixing factors are applicable? e.g. tides, waves, currents, low or strong winds, heavy rainfall run-off observed.			Detail/ describe →	
72	Based upon the water mixing/dilution factors, is there an adequate level of water mixing/dilution to minimise and/or quickly reduce potential wastewater health risks?				

Wastewater Overflow Health Assessment Checklist for Local Government

Q.	WATER ENVIRONMENT	Yes	No	Further Instructions	COMMENTS / NOTES / ACTIONS
	Weather Conditions				
73	Are current and/or forecast weather conditions likely to influence the public health risk level associated with wastewater exposure e.g. hot sunny weather encourage recreational activity, heavy rainfall, strong winds etc.?			Detail/ describe →	
	Warning Signs				
74	Are warning signs required?			If **NO**, go to **Q.79**	
75	Have warning signs been erected? *Table 4 - recommended distance and number of signs.*			If **NO**, Advise or Direct. →	
76	Are there any adequate number of warning signs erected at wastewater impacted, or potentially impacted accessible locations e.g. WWO water entry point, upstream, downstream etc.?			If **YES**, Detail / describe →	
77	Are warning signs two-directional visible from both land access and water side?				
78	Are additional warning signs required?			If **YES**, Detail / describe →	
	Water Samples				
79	Does the potential health risk or environmental impact suggest that water samples for bacterial analysis should be collected?			If **NO**, go to **Q.85**	
80	Have water samples for bacterial analysis been undertaken?			If **NO**, organise bacterial water sample collection **A.S.A.P.** → Go to **Q.85**	
81	At what distances (m) have water samples been collected?				
82	Is the number and locations of water samples representative of the likely area of wastewater impact (including at the source, upstream, downstream) accounting for relevant environmental, weather and likely access conditions)?				

Wastewater Overflow Health Assessment Checklist for Local Government

Q.	WATER ENVIRONMENT	Yes	No	Further Instructions	COMMENTS / NOTES / ACTIONS
	Water Samples				
83	Is additional / follow-up bacterial sampling recommended/required? *See Table 5 for guidance on location and number of samples*			If **YES**, Detail / describe →	
84	Are water sampling results acceptable to enable warning sign removal and (as applicable) close-out of any public health warning e.g. media statement?			If **NO**, ensure repeat sampling is undertaken.	
85	Any additional comments?				
Q.	**GENERAL - END**	**Yes**	**No**	**Further Instructions**	**COMMENTS / NOTES / ACTIONS**
	Stakeholders				
86	Are there any potentially impacted stakeholders that have been or should be notified e.g. commercial shellfish harvesters, sport groups, schools, rowing clubs, fishing groups etc.?			If **YES**, List and contact stakeholders. →	Stakeholder name(s):
	Public Health Risk Level				
87	Is the public health risk level accurate?			If **NO**, State revised '*Health Risk Level* ' and rationale. →	Revised Health Risk Level: Rationale:
	Outstanding / Other Actions				
88	Are there any outstanding / other actions required by the WWSP or other agency?			If **YES**, Detail / describe →	
	Follow-up				
89	Is a follow-up visit or other actions required by LGA?			If **YES**, Detail / describe →	
90	Are arrangements in place to follow-up at the appropriate time?				
91	Any additional comments?				
	END.				

References

Note – References are embedded with web-links

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This document can be made available in alternative formats on request for a person with disability.