



# Interim Guidance for the Notification and Risk Management of Sewage Overflows into Buildings

## Introduction

This document provides guidance on the notification requirements and best response protocols for managing risk in the event of sewage overflows into buildings.

The typical response to an event and an overview of the response process is detailed in [Appendix 1](#).

The risk matrix table ([Appendix 2](#)) provides a consistent framework to notify and manage these events, ensuring the health risk of affected parties is minimised. The risk matrix characterises each unique spill event along a health risk spectrum, and provides the most appropriate and effective response for different scenarios.

## 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 with occupational and domestic 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 directly contacted or splashed by sewage. If hands become contaminated, there is an increased risk of ingestion via hand to mouth transmission.

## Why do these events occur?

There are many causes that could produce sewage overflows. The more common are:

- Ageing sewerage infrastructure, blockages, line breaks, pumping station power/electrical faults/failures, poor sewerage system design and vandalism.
- Sewerage infrastructure defects or incorrect onsite plumbing, may allow stormwater intrusion during heavy rainfall events to overwhelm sewerage system capacity.

- Blockages may be caused by [tree roots](#) infiltrating pipes, accumulation of fats, oil and grease, wet wipes, sanitary items, rags, toys etc. being flushed into the toilet system.

## What can be done to prevent them from occurring?

In order to prevent sewage overflows it is recommended that:

- [Wastewater service providers](#) monitor sewage overflow events over time, isolate problematic areas and address the identified causes (*Click embedded link or see [Useful Resources](#) section*)
- [Wastewater service providers](#) and [on-site wastewater owners](#) maintain and upgrade sewerage infrastructure as required. (*Click embedded links or see [Useful Resources](#) section*)
- Users refrain from flushing [inappropriate items](#) into the wastewater system:
  - Fats, oil and grease from food preparation (kitchen sinks – domestic and commercial)
  - Food scraps, coffee grounds, tea leaves (kitchen sinks)
  - Sanitary items (wet wipes, tampons, napkins, diapers, condoms etc.), toys, syringes etc. (toilets)
  - Newspapers and plastics (toilets)

## Who is responsible for the event?

Owners/Occupiers

- [Sewage spills](#) from [on-site wastewater systems](#) or blockages in plumbing infrastructure within property boundaries (before connection to the sewerage reticulation system).

Wastewater Service Provider

- [Sewage spills](#) caused by faults/blockages in sewerage infrastructure located outside of 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 AS/NZ3500.2:2018](#) (as determined by licensed plumber)

## What is the response to an internal sewage overflow event?

The typical response involves three steps ([Appendix 1](#)):

1. Pre-remediation
  - Agency Notification and Health Risk Assessment (see [Appendix 2](#))
  - Provision of temporary accommodation for impacted occupants (if applicable)
2. Remediation
  - Cleaning and Drying
  - Disinfection
3. Post-remediation
  - Monitoring
  - Final decision – “Building is declared fit for habitation”
  - Return of occupants to property (if applicable)

## What is industry best practice?

Once responsibility has been determined and the health risk of the event is categorised, either:

- Owner/Occupier conducts remediation; or
- Professional Restoration Company/s are engaged

- Best practice in these events is guided by the Approved American National Standard(ANSI)/Institute of Inspection Cleaning and Restoration Certification(IICRC):

- **Water Damage Restoration Standard (S500)** – Adopt latest version

This document provides comprehensive coverage of the complete remediation process and has been developed from the most recent scientific evidence and industry experience.

## What is an approved Professional Restoration Company?

When Professional Restoration Companies are engaged the following requirements must be met:

- Formally certified in the ANSI/IICRC S500
- Each event must be attended by a Certified Technician whom is currently qualified in at least one of the following training courses offered by IICRC (throughout entire restoration process):
  - Water Damage Restoration Technician (WRT)
  - Applied Microbial Remediation Technician (AMRT)
- Remote/regional areas could engage companies/individuals trained to the S500 equivalent standards. Evidence to demonstrate equivalence may be requested by customers.
- The [IICRC website](#) contains a list of certified firms along with training course qualifications that Certified Technicians hold. Evidence of currency may also be sought from company representatives.

## What are the suggested remediation practices?

### 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 and in particular sensitive individuals and pets away from contaminated area. Sensitive individuals are defined in note 3 ([Appendix 2](#)).
  - 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. This optimises the cleaning and disinfection process. Certain soft contents (e.g., soft toys, carpet, mattresses and the like) are deemed unsalvageable and must be taken to an appropriate refuse disposal facility as instructed by local government.
  - Restorability of items may be assessed according to its porosity ([Appendix 3](#))
  - Remove the gross contamination, which includes the wastewater and associated organic materials, by using wet vacuum extraction units, mops, squeegees, towels etc. This removes a large proportion of the pathogens that are present. Pay careful attention to hard to reach places, such as cracks and crevices, wall cavities, beneath floorboards etc. Dispose of cleaning equipment after use to appropriate disposal location.
  - 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). Equipment used may include, air movers, dehumidifiers, heaters, opening doors and windows if weather appropriate.

## Disinfection

- Following 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. As a minimum:
  - Dilution recommendations
  - Contact time
  - Biocidal claims
  - Compatibility with household surfaces and items (e.g., corrode metals, fade cloth etc.)
  - PPE requirements

## Monitoring

- Visual inspection
  - Identifying areas of impact and visually checking progress of the cleaning process
- Moisture assessment
  - Monitoring progress towards the 'ideal standards' of affected surfaces and materials
  - Equipment that may be used include moisture meters, thermometers, hygrometers, psychrometers, thermal imaging cameras
- Sampling protocol
  - To be utilised for purposes of testing for pathogens on surfaces and materials
  - Sampling methods used may include sample/rinse (sponge, swab), Direct Agar Contact
  - General advice is to obtain a representative control sample from an unaffected area of the property in addition to the target sample for optimal comparison and interpretation
  - Sampling requirements are outlined in [Appendix 2](#)

## What are the notification requirements?

All sewer overflows into buildings need to be notified to the Local Government, Environmental Health section. The time frames for notification are presented in [Appendix 2](#). Low risk events require email notification only. Medium Risk and High Risk events require verbal notification followed by email notification. (Refer to note 5 in [Appendix 2](#) for email requirements)

All sewer overflows into buildings need to be notified to the Department of Health. The time frames for notification are presented in [Appendix 2](#). Low risk events only require email notification ([ssalert@health.wa.gov.au](mailto:ssalert@health.wa.gov.au)). Medium Risk and High Risk events require verbal notification followed by email notification. (Refer to note 5 in [Appendix 2](#) for email requirements)

## What symptoms could be related to sewage exposure?

Restorers/occupants 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 sewage spill in a property.

## Useful resources and links

Australian Register of Therapeutic Goods (ARTG) 2018, [ARTG search](#), Australia.

Garcia, Lynne S 2010, *Clinical Microbiology Procedures Handbook*, Volumes 1-3 (3rd Edition). American Society for Microbiology (ASM)

Government of Western Australia, [Domestic wastewater overflows](#), Department of Health

Government of Western Australia, [Code of Practice – First aid facilities and services; workplace amenities and facilities; personal protective clothing and equipment](#) (2002) Commission for Occupational Safety and Health

Government of Western Australia, [Plumbers technical note – Overflow relief gullies and reflux valves](#), Department of Mines, Industry Regulation and Safety

Government of Western Australia, [Water Services Code of Conduct \(Customer Service Standards\) 2018](#)

Government of Western Australia, [Health \(Miscellaneous Provisions\) Act 1911](#)

Government of Western Australia, [Occupational Safety and Health Act 1984](#)

Government of Western Australia, [Occupational Safety and Health Regulations 1996](#)

Government of Western Australia, [Plumbers Licensing Act 1995](#)

Government of Western Australia, [Plumbers Licensing and Plumbing Standards Regulations 2000](#)

Government of Western Australia, [Residential Tenancies Act 1987](#)

Government of Western Australia, [Residential Tenancies Regulations 1989](#)

Institute of Inspection Cleaning and Restoration Certification 2015, [ANSI/IICRC S500 Standard and Reference Guide for Professional Water Damage Restoration](#), 4<sup>th</sup> edition.

Mycometer 2018, [Products](#), Copenhagen, Denmark.

PathWest 2018, [Microbiology](#), The Department of Health Western Australia.

Standards Australia Limited, [AS/NZS 3500.2:2018](#) – Sanitary Plumbing and Drainage Standard

Standards Australia Limited, [AS/NZS ISO 6529](#) - Protective clothing – Protection against chemicals – Determination of resistant of protective clothing to permeation by liquids and gases

Standards Australia Limited, [AS/NZS 1337.1](#) - Personal eye protection: Eye and face protectors for occupational applications

Standards Australia Limited, [AS 1319-1994](#) - Safety signs for the occupational environment

Standards Australia Limited, [AS/NZS 2161](#) - Occupational protective gloves

Standards Australia Limited, [AS/NZS 2210](#) - Occupational protective footwear

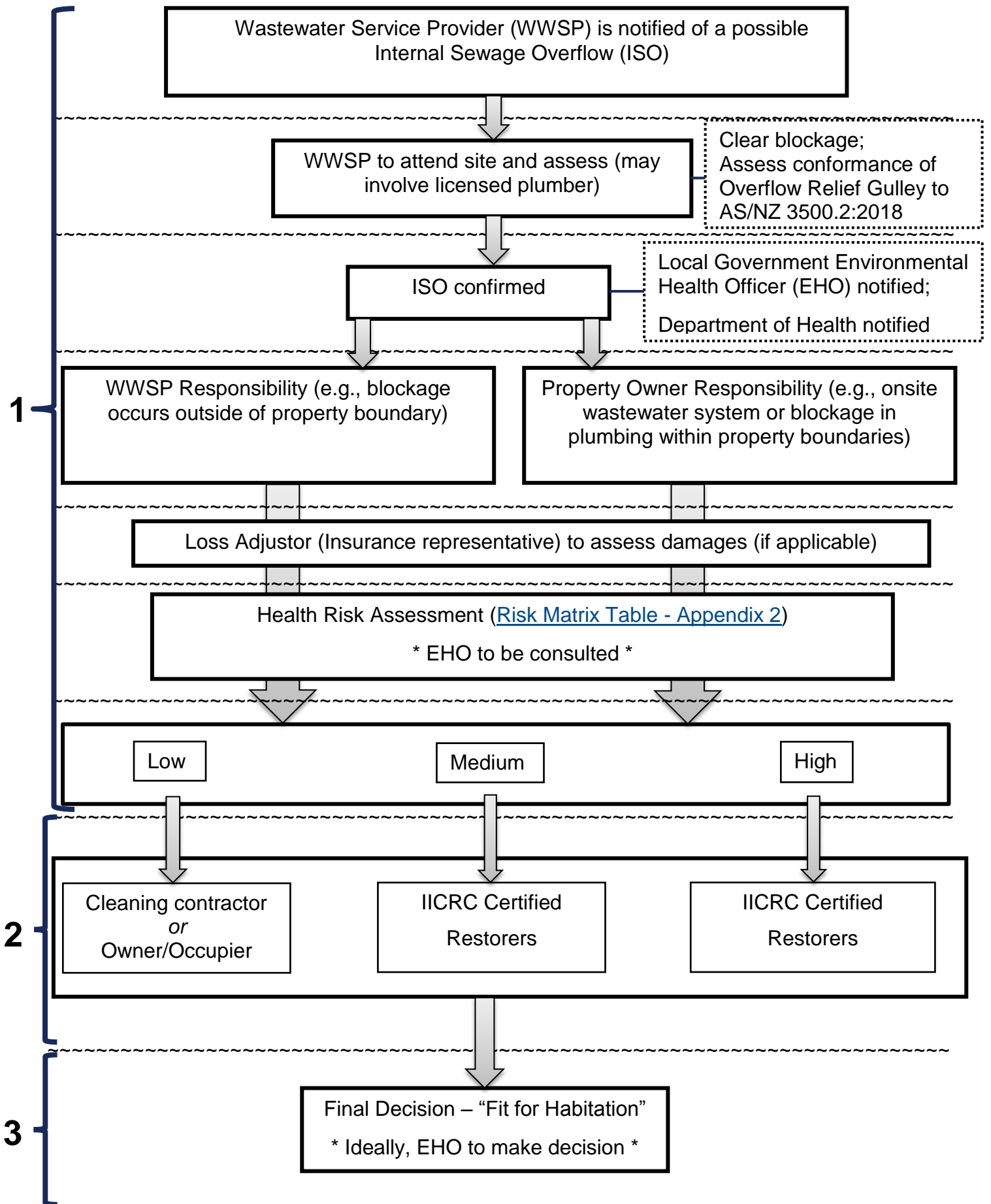
Standards Australia Limited, [AS/NZS 4501.1:2008](#) - Occupational protective clothing: Guidelines on the selection, use, care and maintenance of protective clothing

Therapeutic Goods Administration (TGA) 2018, [Disinfectants and Sterilants](#), Australia.

United States Environmental Protection Agency (EPA) 2009, [Template for Developing Sewer Collection System Preventive Maintenance and Sewer Overflow Response Plans](#), Washington DC.

United States Environmental Protection Agency (EPA) 2018, [Sanitary Sewer Overflows](#), Washington DC.

Appendix 1. Internal Sewage Overflow Response Flowchart



**Appendix 2. Risk Matrix Table and Notification Requirements for Internal Sewage Overflow Events**

Wastewater Overflow (WWO) Characteristics	Health Risk Category	Response Action	Local Government Authority Notification	Department of Health Notification
<p>Confined to wet areas <sup>1</sup>  <b>AND</b>                      Less than 24 hrs from event onset <sup>2</sup>  <b>AND</b>                      No sensitive occupants <sup>2,3</sup></p>	Low	<p>Owner/Occupier  <b>OR</b>                      Cleaning Contractor</p>	<p><u>Email (electronic) notification</u> within next business day of WWO confirmation <sup>5</sup></p>	<p><u>Email</u> (<a href="mailto:ssalert@health.wa.gov.au">ssalert@health.wa.gov.au</a>) within next business day of WWO confirmation <sup>5</sup></p>
<p>Not confined to wet areas <sup>1</sup>  <b>AND</b>                      Impacting only non-porous surfaces <sup>6</sup>  <b>AND</b>                      Less than 24 hrs from event onset <sup>2</sup>  <b>AND</b>                      No sensitive occupants <sup>2,3</sup></p>	Medium	<p>Restoration Contractor <sup>4</sup>  <b>AND</b>                      Environmental Health Officer <sup>8</sup>  <b>AND</b>  <i>Alternative accommodation to be considered</i></p>	<p><u>Verbal notification</u> within 30 minutes of WWO confirmation</p> <p><u>Email (electronic) notification</u> within 12 hours of WWO confirmation <sup>5</sup></p>	<p><u>Verbal notification</u> within 30 minutes of WWO confirmation</p> <p><u>Email</u> (<a href="mailto:ssalert@health.wa.gov.au">ssalert@health.wa.gov.au</a>) within 12 hours of WWO confirmation <sup>5</sup></p>
<p>Not confined to wet areas <sup>1</sup>  <b>AND</b>                      With pooling areas of wastewater/ impacting multiple rooms  <b>AND</b>                      Impacting Semi-/Porous surfaces <sup>6</sup>  <b>AND/OR</b>                      Sensitive occupants <sup>3</sup>  <b>AND/OR</b>                      More than 24 hrs since event onset</p>	High	<p>Restoration Contractor <sup>4</sup>  <b>AND</b>                      Environmental Health Officer <sup>8</sup>  <b>AND</b>                      Sampling Analysis <sup>7</sup>  <b>AND</b>  <i>Alternative accommodation to be confirmed</i></p>	<p><u>Verbal notification</u> within 30 minutes of WWO confirmation</p> <p><u>Email (electronic) notification</u> within 12 hours of WWO confirmation <sup>5</sup></p>	<p><u>Verbal notification</u> within 30 minutes of WWO confirmation</p> <p><u>Email</u> (<a href="mailto:ssalert@health.wa.gov.au">ssalert@health.wa.gov.au</a>) within 12 hours of WWO confirmation <sup>5</sup></p>

1 Wet areas are non-porous, hard surface areas with sloping to drainage e.g., tiled bathrooms, lavatory, laundry etc.

2 If sensitive occupants are present and/or more than 24 hrs has elapsed from time of event onset, Health Risk Category advances to next level of response action

3 Sensitive occupants are defined as the young under the age of 4, elderly aged over 75 years, pregnant women, immunocompromised individuals (e.g., HIV patients, chemotherapy/cancer patients, congenitally immune-deficient individuals, individuals with recent major surgery, individuals with compromised skin surfaces – wounds/cuts/abrasions, unvaccinated individuals – tetanus/diphtheria boosters, Hep A, B etc.)

4 Restoration contractor certified in ANSI/IICRC S500 Standard and with selected training requirements (Water Damage Restoration technician as a minimum). At least one trained and certified restorer must be onsite for acceptable standards to be met. Locations with accessibility issues (e.g., Remote/Regional Country Areas), engaging equivalently trained personnel may be acceptable. Evidence of suitability may be requested.

5 Email notification must include, at a minimum: Brief description of incident, Health Risk Category, Licensed Plumbers and Loss Adjustor brief report (key findings)

6 As classified according to permeance factor ([Appendix 3](#))

7 Sampling Analysis is driven at the request of the affected occupant. If sampling is requested, sampling analysis may be undertaken by Restoration Contractors/Owner/Occupier by utilising commercially available microbiological tools. Alternatively, sampling may be undertaken by or provided under the guidance of an appropriately qualified and experienced professional (e.g. microbiologist, appropriately qualified and experienced Environmental Health Officer (EHO) and other relevantly trained personnel). Note - If restoration is conducted to S500 Standard, this should, in most instances, remove the need for Sampling Analysis.

8 Environmental Health Officer as defined in Western Australia Government Gazette ([West Australian Government Gazette 2017](#)). For Medium and High Risk events, EHO to preferably be onsite with first responders (i.e. wastewater service provider, licensed plumber, loss adjuster etc.) EHO must be consulted for the entire process at these levels of risk. The EHO ideally makes the final decision – “Fit for Habitation”

## Appendix 3. Porosity Guide

### **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 and carpet, upholstery and other textiles should be removed and restored off site. Highly porous materials with low cost or replacement value, such as carpet cushion, carpet, cardboard, tackless strip, wicker, and straw, and soft toys 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 cleaned, disinfected, or replaced as part of the initial restoration process. If these materials are not removed or properly disinfected, they can become reservoirs for growth of microorganisms.

### **Nonporous** (permeance factor $\leq 1$ – do not adsorb or absorb moisture easily)

- Materials such as Formica™, linoleum, vinyl, and tile finishing materials 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 the restoration activities, including post-remediation assessment.



**NOTE: A literature review was conducted to generate much of the information and guidance produced for this document. This review may be provided upon request to interested parties by making contact with the Water Unit.**

## More information

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