

GUIDELINES FOR DRINKING-WATER QUALITY MANAGEMENT FOR NEW ZEALAND

APPENDIX 7: GLOSSARY

ablution facility	Bathing water or laundering facility.
absolute filter pore size	Purports to provide some certainty of removing particles of the size quoted. It is meant to represent the actual size of the pores of a filter. The test protocol needs to be checked before you can be sure of performance. See also <i>nominal size</i> .
absorb	To take up a substance (e.g. water, nutrients, micro-organisms, chemicals, contaminants, light) into the body of an organism or substance. See also <i>adsorb</i> .
abstraction point	The point at which water that is intended for drinking comes under the control of the drinking-water supplier.
acceptable daily intake (ADI)	The intake level in the human, which is confidently believed to be without significant adverse health effects.
accreditation	Provides formal recognition that an organisation is meeting internationally accepted standards of quality, performance, technical expertise and competence. Accreditation is an independent endorsement of a commitment to these standards.
accuracy	Combination of bias and precision of an analytical procedure that reflects the closeness of a measured value to a true value.
acid washing	A process used during the preparation of a container for sample collection. Washing with acid helps to remove trace contaminants adsorbed.
<i>Actinomyces</i>	A group of branching filamentous bacteria reproducing by terminal spores. They are common in the soil and can cause offensive taste and odour in water.

activated carbon	Granules or powder, usually produced by the roasting of cellulose base substances such as coal, wood or coconut shells in the absence of air. It has an extremely porous structure and a very large surface area into which other substances can adsorb. It is used in water conditioning as an absorbent for organic matter and certain dissolved gases. Also referred to as activated charcoal.
acute level	The dose of a determinand that causes an effect after a single or short-term exposure.
adjusted result	The adjusted result of a determinand concentration is the sum of the test result for the determinand concentration and the uncertainty in the determination of that concentration.
adsorb	The uptaking up of one substance at the surface of another. A type of adhesion process that takes place at the surface of a solid or liquid in contact with another medium, see also <i>absorb</i> .
adverse aesthetic effect	An effect other than that arising from a recognised water treatment process on the colour, clarity, smell, taste, or general appearance of drinking-water that makes it unpleasant to drink.
aeration	The process of adding air to water, e.g. by bubbling air through water or causing turbulence or thin film flow to the water so that the air is entrained. It may be used to improve the palatability of water, remove hydrogen sulphide, carbon dioxide, or volatile organic contaminants, or assist in the oxidation of iron and manganese from a soluble to particulate state.
aesthetic	A property of a water in terms of its non-health effect related characteristics such as: colour, suspended material and taste and odours.
aesthetic determinand	A constituent or property of the water that can adversely affect the water's taste, odour, colour, clarity or general appearance, including substances such as manganese and iron compounds that can stain washing and utensils.
aggressiveness	The tendency of a water to corrode water supply pipes and fittings, causing heavy metal concentrations to rise above 50 percent of their MAVs.
agricultural use	Use of water by farms for irrigating crops, watering stock, hosing down sheds etc.
air-gap separation	A physical break between a service pipe and a receiving vessel that is not less than double the diameter of the service pipe measured vertically above the top rim of the vessel and in no case less than 25 mm.
alarm	A device that alerts duty treatment plant operators in such a way that they can make an immediate response to address the problem that caused the alarm.
algae	Algae are unicellular to multicellular plants that occur in fresh water, marine water and damp terrestrial environments. All algae possess chlorophyll. They may contribute to taste and odour problems in water.

alkalinity	Alkalinity is a measure of buffering capacity. A buffer limits the change in pH that occurs when water comes in contact with acidic or alkaline substances. The principle cause of alkalinity in most drinking-waters includes at least one of bicarbonate, carbonate or hydroxide. Alkalinity is measured by titrating with a standard acid to a designated pH.
all practicable steps	In relation to the achievement of any particular result, means all steps to achieve that result, that are reasonably practicable to take in the circumstances, having regard to: <ol style="list-style-type: none">the nature and severity of the harm that may be suffered if the result is not achieved; andthe current state of knowledge about the likelihood that harm of that nature and severity will be suffered if the result is not achieved; andthe current state of knowledge about harm of that nature; andthe current state of knowledge about the means available to achieve the result, and about the likely efficacy of each; and the availability and cost of each of those means.
alpha-emitting radionuclide	A radionuclide that undergoes a nuclear transformation by emitting a helium-4 nucleus (alpha particle).
alum	Aluminium sulphate that is used as a coagulant in the coagulation stage of water treatment. See also <i>coagulation</i> .
aluminium	A metallic element, the thirteenth in the periodic table and one of the most abundant in the earth's crust. Aluminium compounds do not generally have deleterious effects on normal individuals; however, aluminium in water used for kidney dialysis may cause brain disorders in patients and has been speculated to contribute to the environmental factors that may influence the development of Alzheimer's Disease. Aluminium can be present in water either due to passage of that water through soils containing leachable aluminium, or by the addition of aluminium compounds in water treatment, most common in <i>coagulation</i> compounds such as aluminium sulphate and polyaluminium chloride.
amenity	An attribute of a drinking-water supply that contributes to the health, physical independence, and well-being of the building's users but which is not associated with disease or a specific illness.
amoeboid locomotion	Cell locomotion which resembles that of the protozoan <i>Amoeba</i> . The cells move and feed by the use of a pseudopodium (a false foot).
analogue data	Data that may take any value between specified limit values, or a control system that processes this type of data.
analyte	See determinand.
animal	An organism with a spinal chord. Includes any bird, reptile, amphibian, or insect.
anionic	Pertaining to an anion, an ion with a negative charge and in electrolytes, characteristically moves toward the positive electrode, the anode. The five major anions found in water are bicarbonate, carbonate, chloride, sulphate and nitrate. See also <i>cationic</i> .

annual compliance	Compliance of a drinking-water supply with the DWSNZ is assessed over 12 consecutive calendar months and reported to the Government and public annually.
anode	The positive electrode in an electric cell.
anthracite	Non-bituminous variety of hard bright coal, consisting of 93% carbon. Newer water treatment plants often use a thin layer of anthracite over a sand or a coarse medium-deep filter bed. Anthracite is used primarily because of its low density, which allows larger size grains to settle on the top of the filter after backwashing. This reduces the rate at which the filter will clog. Anthracite is also able to adsorb some substances from the water, particularly organic substances.
antigenic	The ability of a substance introduced into the blood to stimulate production of antibodies.
aquifer	A water-saturated zone of the ground that will yield water to bores or springs at a sufficient rate to serve as an adequate source of water. An aquifer contains pores or open spaces filled with water.
aquitard	A low-permeability layer that restricts the flow of groundwater from one aquifer to another, for example, sandy silt. The rate at which water can be abstracted from these layers is usually too low for the formation to be used as a source.
artesian aquifer	A confined aquifer in which the water pressure is sufficiently high that, if the aquifer were not confined, the water level would be above the ground surface; also referred to as flowing artesian aquifer.
asymptomatic	The absence of symptoms.
auxiliary water supply	Any water supply, other than a community water supply, on or available to any premises.
backflow	Flow of water from a consumer's property back into the reticulation system. May be caused by a suction in the supply main due to a break or fire flow demand, or cross connection with a secondary water source. Requirements for backflow prevention are covered in the Water Supply Protection Regulations 1961, and the Building Code 1992.
backflow preventer	A device to prevent backflow, as described in subclause (1) of regulation 7 of the WSPR.
backflush	A process in which filter beds are subjected to water flow opposite to the service flow direction to loosen and clean the bed, and flush solid materials accumulated on the filter bed to waste. Air may be used too. Also referred to as backwash.
bacteria	The simplest form of life that can be unicellular or multicellular. Bacteria possess a simple nucleus, can reproduce rapidly and lack chlorophyll. Some members of the group are disease-causing.
bacterial symbionts	Bacteria which live together in permanent or prolonged close association with beneficial consequences to each other.

bag filter	A pressure-driven separation process that removes particulate matter larger than 1 µm, using an engineered porous filtration media by surface filtration. A bag filter is typically constructed of a non-rigid, fabric filtration medium housed in a pressure vessel (housing) in which the direction of flow is from the inside of the bag to the outside.
bank filtration	<p>A surface water pretreatment process using the bed and bank of the river and the adjacent aquifer as a natural filter and relying solely on the natural properties of the surface water bed and aquifer, unmodified by engineering works or activity, except for the recovery of groundwater via a pumping bore (USEPA 2003d).</p> <p>The requirements for bank filtration are specific, so many existing infiltration galleries will not qualify.</p> <p>The mechanisms active in this type of system are believed to be similar to slow sand filtration, so provide a more reliable removal of protozoa than the mechanisms active in infiltration galleries.</p>
Bayesian statistics	Bayesian statistical methods allow direct probability statements to be made about hypotheses, by updating a prior belief or understanding about those hypotheses in the light of new data. In contrast classical (i.e. frequentist) methods only allow statements to be made about the probability of obtaining of ranges of data, under the assumption that a particular hypothesis is true; if this probability is small the hypothesis is rejected. The calculation procedures used by classical methods make no use of prior information (but such information is used in selecting the hypothesis, the data and the significance level).
Becquerel	Radioactive activity of one nuclear transformation per second.
beta-emitting radionuclide	A radionuclide that disintegrates by emitting a negative (or positive) electron (beta particle).
bias	Consistent deviation of measured values from the true value caused by systematic errors in a procedure. See <i>accuracy</i> and <i>precision</i> .
biofilm	A thin film or slime which may form on the inside surfaces of pipes, harbouring micro-organisms, for example, heterotrophic bacteria. Some of these organisms may be opportunistic pathogens which may exist as part of normal microflora in the body, but under certain conditions cause disease in compromised hosts.
biological activated carbon	Activated carbon on to which living organisms are adsorbed.
biological determinands	In water quality analysis, biological organisms that can be detected in the water, e.g. total coliforms. See also <i>total coliforms</i> , <i>aesthetic</i> , <i>chemical</i> and <i>radiological determinands</i> .
biological half-life	The time interval required for half of the quantity of material absorbed by a living organism to be eliminated naturally. Also [more usual] the time taken for half of the organisms in a population to die off.
bloom	An unusually large number of organisms per unit of water, usually algae, made up of one or a few species.

bore	Any hole constructed to access groundwater for supply purposes.
bore (intake) depth	Depth to the bottom of the casing or top of the uppermost screen.
bore field	More than one bore connected to a single water supply.
bore head	The physical structure, facility or device at the land surface from which groundwater is abstracted from subsurface water-bearing formations.
borelog	A description of the various sediments which are penetrated by a well, (for example, gravel, sand, silt, clay, peat, etc) listing their depths. Also referred to as a <i>lithological log</i> .
brackish	Water that is intermediate between fresh and salty.
buffer(ing) capacity	The capacity of water to resist pH changes on addition of acid or alkali, absorbing protons from acids and releasing them on addition of alkali, see <i>alkalinity</i> .

building

- 1) Unless the context otherwise requires, the term building means any temporary or permanent movable or immovable structure (including any structure intended for occupation by people, animals, machinery, or chattels); and includes any mechanical, electrical, or other system, and any utility systems, attached to and forming part of the structure whose proper operation is necessary for compliance with the building code; but does not include:
 - a) systems owned or operated by a network utility operator for the purpose of reticulation of other property; or
 - b) cranes, including any cranes as defined in any regulations in force under the Health and Safety in Employment Act 1992; or
 - c) cablecars, cableways, ski tows, and other similar stand-alone machinery systems, whether or not incorporated within any other structure; or
 - d) any description of vessel, boat, ferry, or craft used in navigation, whether or not it has any means of propulsion, and regardless of that means; nor does it include:
 - i. a barge, lighter, or other like vessel:
 - ii. a hovercraft or other thing deriving full or partial support in the atmosphere from the reactions of air against the surface of the water over which it operates
 - iii. a submarine or other thing used in navigation while totally submerged; or
 - e) vehicles and motor vehicles (including vehicles and motor vehicles as defined in section 2 (1) of the Transport Act 1962 and section 2 (1) of the Transport (Vehicle and Driver Registration and Licensing) Act 1986), but not including vehicles and motor vehicles, whether movable or immovable, which are used exclusively for permanent or long-term residential purposes; or (ea) Aircraft, including any machine that can derive support in the atmosphere from the reactions of the air otherwise than by the reactions of the air against the surface of the earth; or
 - f) containers as defined in section 2 of the Dangerous Goods Act 1974; or {Editorial Note: s.3 (1) (f) & (g) repealed and s.3 (1) (f) substituted, to come into force by Order in Council under 1996, No. 30, s.149. The substituted s.3 (1) (f) is listed below for reference. “(f) Any container (other than a stationary container)”}; or
 - g) magazines as defined in section 2 of the Explosives Act 1957; or {Editorial Note: s.3 (1) (f) & (g) repealed and s.3 (1) (f) substituted, to come into force by Order in Council under 1996, No. 30, s.149.}
 - h) scaffolding used in the course of the construction process; or
 - i. falsework used in the course of the construction process.

building (cont.)	<p>2. For the purposes of [Part IX of this Act] a building consent, a code compliance certificate, and a compliance schedule the term building also includes:</p> <p>4) any part of a building; and</p> <p>5) any 2 or more buildings that, on completion of any building work, are intended to be managed as 1 building with a common use and a common set of ownership arrangements.</p> <p>3. For the purposes of subsection (2) of this section, where any utility system or any part of any utility system:</p> <p>a) is external to the building; and</p> <p>b) is also connected to or is intended to be connected to:</p> <p>i. a network under the control of a network utility operator; or</p> <p>ii. some other facility which is able to provide for the successful functioning of the utility system in accordance with its intended design –</p> <p>that utility system or that part of the utility system shall be deemed to be part of a building.</p> <p>4. Notwithstanding the provisions of subsection (3) of this section, where a septic tank is connected to a building utility system the septic tank shall be deemed to form part of that building utility system.</p>
bulk distribution zone	The part of the distribution network that delivers water from the treatment plant(s) to one or more distribution zones. Usually, but not necessarily, owned and operated by a different water supplier, may or may not include service storage, and services only a nominal number of consumers directly. A bulk distribution zone may be identified due to its operational characteristics, or the characteristics of the water it supplies, by agreement between the water supplier(s) and the DWA. Each bulk distribution zone will be graded separately.
bulk water supply point	The point at which the water's ownership changes from the bulk water supplier to the satellite supplier.
bush catchment	A catchment predominantly covered with mature bush that yields water of a relatively consistent quality.
C.t value	The product of the concentration (C mg/L) of the disinfectant and the contact time (t minutes) required to cause a specified level of inactivation in a micro-organism. C.t is a measure of the exposure to the disinfectant. It has the unit min.mg/L.
carcinogen	A substance that induces cancer.
cartridge filtration	A pressure-driven separation process that removes particulate matter larger than 1 µm, using an engineered porous filtration media through surface or depth filtration. A cartridge filter is typically constructed as rigid or semi-rigid, self-supporting filter elements placed in a housing. The flow is from the outside of the cartridge to the inside.
catchment assessment	A survey of the area from which raw water for a drinking-water supply is obtained to allow potential contaminant sources to be identified, and the risk they present to the raw water quality evaluated. Water quality data (e.g. <i>E. coli</i> results) are not part of the assessment, but in combination with the catchment assessment, they are used to establish the source risk category.

cathode	The negative electrode of an electric cell.
causal relationship	A relationship where a definite link is established between a cause and an effect. For example, where <i>Cryptosporidium</i> present in a drinking-water supply can be shown to have caused illness in the community.
cause	The situation, action or inaction that results in an <i>event</i> . See also <i>event</i> .
certification	<p>The issuing of a certificate of satisfactory performance (for a treatment installation).</p> <p>Certification may be done by the manufacturer, vendor or installer. It should be drafted in such a way that the manufacturer, vendor or installer's certificate guarantees that the treatment process will meet the specified performance standards provided the process is operated according to the procedures specified by the manufacturer, vendor or installer as being necessary to achieve the specified performance rating.</p> <p>Another form of certification can be provided by a certifying body accredited by International Accreditation New Zealand (or JASANZ) as competent to certify that an operator is capable of performing a function satisfactorily. For example IANZ will accredit the drinking-water assessors (DWAs) as competent to certify that drinking-water plant staff are competent to carry out FAC or <i>E. coli</i> presence/absence testing.</p>
challenge test	A test of a treatment process (usually by the manufacturer or vendor of the process) to establish the performance parameters of that treatment process; i.e. the degree of treatment it can achieve (e.g. the log credit rating) and the operational requirements to ensure the specified performance rating can be achieved sustainably. This may be done in the factory.
chemical coagulation	The use of metallic salts (e.g. aluminium or iron) or organic polyelectrolytes (polyamines or polydadmacs) to aggregate fine suspended or colloidal particles, causing them to clump together into larger particles.
chemical contamination	The presence of, or introduction of, inappropriate or toxic chemicals (e.g. in water). For example, contamination of soft corrosive water by leaching of lead based paints, lead flashings. See also <i>microbiological</i> and <i>physical contamination</i> .
chemical determinands	In water quality analysis, chemical substances or entities whose presence in the water may be measured. These include inorganic chemicals (e.g. metals), organic chemicals (e.g. pesticides, trihalomethanes). See also <i>aesthetic</i> , <i>biological</i> and <i>radiological determinands</i> .
chloramines	Compounds that may form through the reaction of free available chlorine (FAC) with nitrogen compounds. Chloramines formed from the reaction of FAC with ammonia are monochloramine, dichloramine or trichloramine.
chlorinated supplies	See chlorination.

chlorination	<p>chlorinated supplies:</p> <p>Supplies that are chlorinated but have not been demonstrated consistently to have a FAC concentration equivalent to at least 0.2 mg/L of FAC at pH 8.0.</p> <p>continuously monitored chlorination:</p> <p>Requires the use of an online continuous FAC monitor, calibrated at least as frequently as recommended by the equipment suppliers, with an alarm system (FAC monitor or dosage monitor) that can prompt a site visit, without delay, to service the fault or condition.</p> <p>non-continuously monitored chlorination:</p> <p>Chlorination in which the FAC (equivalent at pH 8) is always at least 0.2 mg/L but that does not satisfy all the criteria for continuously monitored chlorination.</p>
chromogenic substrate	<p>A material (substrate) used to identify micro-organisms by characteristic colour produced when the target , micro-organism is grown upon it.</p>
chronic level	<p>The dose of a determinand that causes an effect after long-term exposure.</p>
clarification	<p>The removal of suspended particles in water, usually by settling. Also referred to as settling or sedimentation. Alternatively the suspended particles may be separated by flotation, using air bubbles.</p>
coagulation	<p>See chemical coagulation.</p>
coefficient of variation	<p>The standard deviation (s) divided by the estimate of the mean (\bar{x}); often expressed as a percentage. This statistic normalises the standard deviation and can help when comparing analyses that cover a wide range of concentrations. Also called relative standard deviation. See the example in Chapter 3, Section 3.2.4.2 of the <i>Guidelines</i>.</p>
coliform organisms	<p>The bacteria used as indicators that organic, possibly faecal, contamination of the water may have occurred. Sometimes referred to as total or presumptive coliforms and includes <i>E. coli</i>.</p>
colloid	<p>An extremely finely divided form, 0.0001 to 1 micron in size, of a substance that will not settle out of a solution. Colloids are intermediate between a dissolved particle and a suspended solid, which will settle out of solution.</p>
commercial use	<p>Use of water by shops, office buildings, apartments, motels, hotels, shopping centres, laundries and service stations. Commercial use demands do not tend to materially affect peak municipal demand levels.</p>
commissioning test	<p>Validation testing of a treatment process in situ (i.e. when it has been installed at the treatment plant), performed at the time of commissioning (see validation test). This may be by using a challenge test or by demonstrating that the operating parameters necessary to achieve the specified performance rating, which have been previously established by challenge testing, are being achieved on site.</p>
committed effective dose	<p>The lifetime sum of the effective dose (of radioactivity), 50 years for adults: 70 years intake to age 70 for children).</p>

communicable disease	Includes any infectious disease, tuberculosis, venereal disease, and any other disease declared by the Governor-General, by Order in Council, to be a communicable disease for the purposes of the Health Act.
community	In the “Regulatory Instruments for Drinking-Water” document, means all consumers of water including domestic, commercial, industrial and agricultural users.
community drinking-water supply	A reticulated publicly or privately owned drinking-water supply connecting at least 2 buildings on separate titles and serving at least 1500 person days a year (e.g. 25 people at least 60 days per year).
complexation	The formation of a soluble compound by the union of a sparingly soluble metal ion with a non-metallic ion or molecule called a complexing agent.
compliance	A drinking-water supply is said to be in compliance with the Drinking-water Standards for New Zealand (DWSNZ) when the results of the monitoring of Priority 1 and 2 determinands show that the water supply satisfies the requirements of the DWSNZ.
compliance criteria	Requirements that must be satisfied to achieve compliance.
compliance monitoring	Monitoring conducted to test whether a drinking-water supply complies with the DWSNZ.
compliance monitoring period	The time over which treatment performance is assessed to determine whether a transgression has occurred and whether the number of permissible transgressions has been exceeded. Compliance monitoring periods are sequential.
compliant	A drinking-water supply is said to be compliant if it complies with the DWSNZ.
conductivity	Measurement of the ability of a water to carry an electric current. This ability depends on the presence of ions; their total concentration, mobility, valence; and on the temperature at the time of measurement. Conductivity can be used to estimate the total dissolved solids content. Conductivity is also used in the calculation of the Saturation Index, see <i>Langelier Saturation Index</i> . The molar conductivity of a sample is the sum of the molar conductivities of all the ions present $k_n = \sum k_{ji}$. This can be used to check whether all ions present have been analysed for. The conductivity of a sample can be calculated from the concentrations of the ions it contains and their molar conductances. Comparison of this calculated value with the measured conductivity can be used as a check whether the total measured ion concentration is too low or too high.
confidence interval	An interval that has a prescribed probability of containing the true value of an unknown parameter.
confidence level	The probability that an assertion about the value of a population parameter is correct.
confidence limits	The upper and lower boundaries of the confidence interval.

confined aquifer	An aquifer that is overlain by a confining bed. The confining bed has a significantly lower hydraulic conductivity than the aquifer.
conjunctivitis	Inflammation of the conjunctiva of the eye, which becomes red and swollen and produces a watery or pus-containing discharge. Caused by infection by bacteria or viruses, allergy, or physical or chemical irritation.
contact time	The hydraulic residence time, determined by a tracer test or by a USEPA recognised calculation procedure, from the point of entry to the disinfectant contact device (normally a tank) to the point of exit. The contact time should ideally be within the confines of the treatment plant site, although 'contact mains' disinfection may be practised as long as the required contact time is met prior to the first consumer.
contaminant	A substance or organism in the water that can cause undesirable public health or aesthetic effects.
contamination	The introduction of a substance or organism into raw water or drinking-water that causes or is capable of causing that water to exceed the maximum acceptable values for determinands specified in the drinking-water standards.
contingency plan	A plan to be followed should corrective actions fail to stop a hazard, or hazards, entering the distribution system. In most cases, contingency plans are intended to deal with the possible breakthrough of high levels of micro-organisms into the distribution system, or situations in which <i>acute</i> risk to public health arises because of the presence of a chemical hazard.
contingency planning	In Public Health Risk Management Planning: preparing a plan to manage risks should the drinking-water supply system fail.
continuously monitored chlorination	See chlorination.
control limit	A value set by the water supplier for each compliance criterion or operational requirement, with the aim of triggering some action to prevent the value reaching the transgression level. The control limit is recorded in the PHRMP along with the preventive actions considered to be necessary when the control limit is reached.
controlled catchment	A catchment that is closed to general public use. Usually only controlled culling of animals is allowed.
conventional treatment	A series of processes including coagulation, flocculation, sedimentation, and filtration, with sedimentation defined as a process for removal of solids before filtration by gravity separation. Dissolved air flotation (DAF) may be regarded as conventional treatment for purposes of awarding treatment log credits.
corrective action	An action taken after an event has occurred to reduce the likelihood of the event recurring by improving the preventive measures in place, or to minimise the risk created by the event. See also <i>event</i> and <i>preventive measure</i> .

corrosion	The gradual decomposition or destruction of a material by chemical or physical action, often due to an electrochemical reaction. The most common cause of internal pipe corrosion in reticulation is the corrosiveness of water passing through it.
criterion of detection	The concentration that produces a signal greater than 5 times the signal/noise ratio of the instrument. This is 1.65 times the standard deviation of a low level sample or standard. See Chapter 17.6 of the Guidelines and <i>limit of detection</i> .
critical control point	A term used in Hazard Analysis Critical Control Point methodology. Critical control points are steps in a system at which control can be applied and is essential to prevent or eliminate a hazard or reduce it to an acceptable level. Re water supply: the points at which it is possible for the supplier to eliminate, minimise or isolate hazards to the drinking-water that may result in failure to comply with the DWSNZ.
critical limits	A criterion which separates acceptability from unacceptability.
critical points	In relation to a drinking-water supply: points in a process or in equipment where failure to function correctly can lead to a public health hazard.
cross connection	A connection formed between water from the distribution system and water from some other source that may result in contamination of the distribution system water. An example of a potential for cross connection would be an industrial consumer who may have an alternative bore source as well as water fed from the distribution system, and the same internal lines carrying both waters.
<i>Cryptosporidium</i>	A member of the protozoa family. During its complex life cycle, thick-walled oocysts are formed that are 4–6 µm in diameter. The oocysts are excreted in faeces and are the infective form of the organism. <i>C. parvum</i> is the species responsible for most human infection. <i>Cryptosporidium</i> generally causes self-limiting diarrhoea, which may include nausea, vomiting and fever. In immunocompromised people, infection can be life-threatening.
cyanobacteria (Cyanophyceae)	A major group of bacteria (often with the ability to carry out photosynthesis) previously known as blue-green algae. Cyanobacteria occur throughout the world in fresh and salt waters. Some species produce toxins.
cyanotoxin	A toxin secreted by certain cyanobacteria.
cyst	A cell or cells enclosed by a non-living membrane. In certain protozoan parasites of the alimentary canal, including <i>Giardia</i> , cysts are the dormant stage produced during the protozoan's lifecycle. Cysts, passed out in the faeces, have tough outer coats that protect the parasites from unfavourable conditions. The parasites emerge from their cysts when they are ingested by a new host. See also <i>oocyst</i> .
cytoplasm	The content of a biological cell, including the plasma membrane, but excluding any nuclei.
DAF	See dissolved air flotation.

datasheets	The section in the <i>Guidelines</i> that lists the sources, occurrence, removal processes, analysis, health effects and derivation of the MAVs of determinands.
DBP	See disinfection by-product (DBP).
dental fluorosis	Dental fluorosis is the disfigurement of teeth by exposure to continuous amounts of excessive fluoride. Slight disfigurement of teeth may occur at 1.5 mg/L F with the teeth becoming chalky white and the enamel weakened in more severe cases. At levels above 3.0 mg/L F the disfigurement can become pronounced with the teeth turning a yellow/brown colour (mottling) and black spots. Generally this only occurs during the calcification of teeth in children under 10 years of age and will only show when the permanent teeth come through.
designated officer	A health protection officer or DWA designated by the Director-General of Health under section 7A(4) of the Health Act 1956.
detection limit	See limit of detection.
determinand	A constituent or property of the water that is determined or estimated in a sample, e.g. microbial determinand: total coliforms; chemical determinand: chloride; physical determinand: turbidity; and radiological determinand: radon.
diatomaceous earth filtration	Filtration using diatomaceous earth as the medium usually 0.01–0.2 mm in size in a process in which a precoat cake of filter medium is deposited on a support membrane and additional filter medium is added continuously to the feed water to maintain the permeability of the filter.
direct filtration	A water treatment process using chemical coagulation without a clarification step upstream of the filter(s).
direct intake	An intake that draws water directly from the source when there is a consistently high enough level to draw water. Can be in the form of a floating pontoon or inlets covered with screens to prevent the entry of gross solids.
direct integrity test	See integrity test.
Director-General	The chief executive under the State Sector Act 1988 of the Ministry of Health; and, in relation to any power or function delegated by that chief executive, includes any person to whom that chief executive has delegated that power or function.
disinfectant C.t value	See C.t value.
disinfection	The process used to inactivate micro-organisms in a drinking-water supply. Common methods of disinfection include chlorination, ozonation, ultraviolet light (UV) irradiation and boiling.
disinfection by-product (DBP)	A contaminant produced in the drinking-water supply as a by-product of the disinfection process.

disinfection residual	The amount of disinfectant still present in the water at any time.
dissolution	The disintegration or decomposition of a material, resulting in the material being taken into solution.
dissolved air flotation (DAF)	A clarification process in which the flocs formed during coagulation and flocculation are floated to the surface by air bubbles. This is in contrast to conventional clarification in which the flocs are removed by settling.
distribution system	All the trunk main, storage and distribution system components that follow a treatment plant and any post-treatment storage facility at the treatment plant. See <i>network reticulation</i> .
distribution zone	The part of the drinking-water supply network within which all consumers receive drinking-water of identical quality, from the same or similar sources, with the same treatment and usually at the same pressure. It is part of the supply network that is clearly separated from other parts of the network, generally by location but in some cases by the layout of the pipe network. For example, in a large city, the central city area may form one zone, with outlying suburbs forming separate zones; in a small town, the system may be divided into two distinct areas. The main purpose of assigning zones is to separately grade parts of the system with distinctly different characteristics.
DNA	Deoxyribonucleic acid. The carrier of genetic information for all living organisms except for the group of RNA viruses.
dolomite filter	A filter that uses dolomite as a medium instead of graded sands. Dolomite is a carbonate mineral with the general formula $\text{CaMg}(\text{CO}_3)_2$. The main purpose of this type of filter is to reduce the aggressiveness of a water by increasing its pH and alkalinity.
domestic and food preparation use	In relation to water: use (whether in a household, commercial or industrial premises, or in any other premises or circumstances) for any of the following purposes: <ul style="list-style-type: none"> a) human consumption b) preparing food or drink for human consumption c) preparing or processing products ultimately intended for human consumption (for example, processing animal carcasses) d) washing utensils used for preparing, storing, or serving food or drink for human consumption e) washing utensils used by people for eating or drinking f) human oral hygiene. <p>Typical per capita demand figures for this purpose vary from 100 - 1,000+ L/head/day, with an average for urban areas being around 350 L/head/day.</p>
domestic drinking-water treatment appliance	A device or a piece of equipment which includes associated pipework and valves as supplied that is used for treating water intended for drinking.
downtime	The length of time for which a process or monitoring equipment in the treatment plant is out of action.
draw-off	Taking water from a reservoir, river, lake or aquifer.

drinking-water	Water intended to be used for human consumption, food preparation, utensil washing, oral hygiene or personal hygiene.
Drinking-water Assessor (DWA)	Currently refers to an officer appointed for a health district under the Health Act 1956. Includes any Deputy DWA and, for the purposes of Part IV of the Act, any medical practitioner acting under the DWA's direction. Used to describe the designated officer who will be so appointed under the proposed Public Health Bill (which is yet to be enacted). A DWA will have to be qualified as specified in the Bill.
drinking-water emergency declaration	Means an emergency declaration under the Health [Drinking-Water] Amendment Act.
Drinking-water Standards for New Zealand (DWSNZ)	A yardstick to assess the quality of drinking-water. The DWSNZ defines the maximum acceptable values (MAVs) of health significant determinands and specifies methods for determining whether a drinking-water supply complies with the DWSNZ.
drinking-water supplier	Means a person who supplies drinking-water to people from a drinking-water supply; and includes that person's employees, agents, lessees, and subcontractors, while carrying out duties in respect of that drinking-water supply. See <i>drinking-water supply owner</i> .
drinking-water supply	Means a publicly- or privately- owned system for supplying drinking-water to a person or group of persons, on a temporary or permanent basis from the raw water stage and treatment of that raw water into drinking-water, up to but not including the point of supply; and includes, without limitation, a well, a bore, a treatment plant, a network reticulation system, and a tanker.
drinking-water supply owner	Any person (body corporate or network utility operator) in whom is vested the ownership of any drinking-water supply system or part thereof, including temporary drinking-water supplies. In this document the agent of a drinking-water supply owner is deemed to have the same obligations and responsibilities as the owner with respect to implementing the Ministry of Health's drinking-water policy as set out in Chapter 1 of the <i>Guidelines for Drinking-Water Quality Management for New Zealand</i> . See <i>drinking-water supplier</i> .
DWA	See Drinking-water Assessor (DWA).
dwelling house	Means any building, tent, caravan, or other structure or erection, whether permanent or temporary, that is used or intended to be used in whole or in part for human habitation, and includes the land and any outbuildings and appurtenances belonging thereto or usually enjoyed therewith. See also <i>building</i> .
DWSNZ	See Drinking-water Standards for New Zealand (DWSNZ).
<i>E. coli</i>	A bacterium used as an indicator that faecal contamination of the water has almost certainly occurred, so pathogens may be present in the water.

effective dose (radioactivity)	The effective dose is the equivalent, uniform, whole body dose having the same radiation health detriment as the actual dose distributed among the various organs of the body, with the unit sievert or millisievert (mSv). See also <i>Committed effective dose</i> .
empty bed contact time	The time required for the water to pass through the volume equivalent to the media bed (including pore space), without the media being present. This is given by the bulk volume of the media bed (including the pore space) divided by the volumetric flow through the contactor.
endemic	Occurring frequently in a particular region or population: applied to diseases that are generally or constantly found among people in a particular area.
engineer	In relation to anything done or to be done in the district of a local authority, being a thing to which the WSPR apply, means a person who: <ol style="list-style-type: none"> a) is registered as an engineer under the Engineers Registration Act 1924 or holds a certificate of recognition issued by the Engineers Registration Board constituted under that Act or is qualified for appointment as an Inspector within the meaning of the Health Act 1956 in accordance with any regulations for the time being in force under that Act; and <p>is appointed by the local authority to perform the duties of an Engineer for the purposes of these regulations.</p>
enhanced combined filter performance	Performance measured on the combined filter effluent, conventional and direct filtration plants that demonstrates a turbidity level in the combined filter effluent (CFE) less than or equal to 0.15 NTU in at least 95 percent of the measurements taken each month. LT2ESWTR definition.
enhanced individual filtration performance	Individual filter performance demonstrating ongoing compliance with the following turbidity criteria, based on continuous monitoring of turbidity for each individual filter: <ol style="list-style-type: none"> 1. Filtered water turbidity less than 0.10 NTU in at least 95% of the maximum daily values recorded at each filter in each month, excluding the 15-minute period following backwashes, and 2. No individual filter with a measured turbidity level of greater than 0.3 NTU in two consecutive measurements taken 15 minutes apart. LT2ESWTR definition.
enteric viruses	Viruses occurring in the digestive system and found in faeces of human or animal origin.
entity	Any legally identifiable person or group of persons having a common purpose or function.
environmental health officer	Means an Environmental Health Officer appointed under section 28 of the Health Act 1956.

epidemiological	Pertaining to the study of epidemic disease, with a view to finding means of control and future prevention. This not only applies to the study of such classical epidemics as plague, smallpox, and cholera but also includes all forms of disease that relate to the environment and ways of life. It thus includes the study of the links between smoking and cancer, and diet and coronary disease, as well as communicable diseases.
erodible catchment	A catchment that has some instability, such as felled forest or farmed areas. In an erodible catchment the surface water is visibly turbid when in flood.
<i>Escherichia coli</i>	See <i>E. coli</i> .
event	An incident or situation that may introduce a hazard (or hazards) into the water.
exceedence	The occurrence of a determinand in a sample at a concentration greater than the maximum acceptable value (MAV).
FAC	See free available chlorine (FAC).
FACE	See free available chlorine equivalent (FACE).
faecal coliforms (thermotolerant coliforms)	See also thermotolerant coliforms, <i>E. coli</i> , presumptive coliforms and total coliforms.
feral (animal)	A wild, untamed animal.
filter (granular media)	A single or multiple containment of granular media, the outflow from which is controlled as a single unit that can be independently isolated from service.
filter run time	The period of time that a filter can be used before it clogs up with floc or other particulate matter, and backflushing is required. See also <i>backflush</i> , <i>backwash clarification</i> and <i>floc</i> .
filtrate	Water leaving a filter.
filtration	A treatment process that removes suspended particles from water by passing the water through a medium such as sand or other suitable material.
flocculation	The gathering together of coagulated clumps of fine material to form floc.
flotation	The process of floating off the particulate matter present in water, usually after coagulation.
free available chlorine (FAC)	The chlorine present in chlorinated water in the form of hypochlorous acid and hypochlorite ion.
free available chlorine equivalent (FACE)	The FAC concentration that would have the same disinfecting power as the chlorine solution would have when adjusted to pH 8; see Figure A1.1 in the DWSNZ.
fully chlorinated water	Water in which the free available chlorine concentration consistently exceeds the equivalent of 0.2 mg/L as Cl ₂ at pH 8.0.
functional requirements	In relation to a building, means those functions which a building is to perform for the purposes of the Building Act 1991.

fungicide	A fungus-destroying substance.
gamma radiation	Short wavelength electromagnetic radiation emitted from the atomic nucleus. Gamma rays are more dangerous than alpha and beta particles as they are able to fully penetrate the body and cause harm. See also <i>alpha</i> and <i>beta particles</i> .
genotoxic	Having the ability to cause damage to the genetic material or associated structures (DNA, chromosomes).
geophysical techniques	Techniques used to study the subsurface geology using physical measurements. For example, electrical and electromagnetic geophysical methods determine the properties, ground resistivity and conductivity. These properties can help determine subsurface geology, water quality, contamination, salinisation and freshwater/saltwater interface, and locate water-bearing formations.
geothermal	Arising from the heat energy of the earth, especially in volcanic regions, e.g. geothermal water and steam. See also <i>hydrothermal</i> .
germ	Micro-organisms than can cause disease. Included in this general term are bacteria, viruses, protozoa, helminths, cyanobacteria and toxic algae.
<i>Giardia</i>	A flagelated member of the protozoa family. <i>Giardia</i> infects the gastrointestinal tract of humans and certain animals. Cysts are the infective form of the organism excreted by the host. They are ovoid in shape and are from 8–12 µm long. <i>G. intestinalis (lamblia)</i> is the species usually responsible for human infection. <i>Giardia</i> causes abdominal cramps and diarrhoea, which is self-limiting in most cases.
gram-negative	Describes bacteria that stain purple with the differential stain devised by Hans Christian Joachim Gram. They generally belong to the genera <i>Bacillus</i> and <i>Clostridium</i> ; all streptococci, micrococci, staphylococci; <i>Pneumococci</i> ; <i>Corynebacterium diphtheriae</i> and related diphtheroids; <i>Mycobacterium tuberculosis</i> and related species; and yeasts. See also <i>gram-positive</i> .
gram-positive	Describes bacteria that stain red, brown or green with Gram's stain. These bacteria generally belong to the <i>family Enterobacteriaceae</i> ; <i>Vibrio cholerae</i> ; the genus <i>Neisseria</i> and <i>Bacteroides</i> ; all brucellas, the genera <i>Haemophilus</i> , <i>Bordetella</i> , <i>Pasteurella</i> , <i>Yersinia</i> . See also <i>gram-negative</i> .
groundwater	Water contained beneath the land surface. More particularly, water contained in the saturated zone of the soil, which can be extracted in usable quantities.
groundwater residence time	The time lag between the water entering a recharge area and arriving at a well. During this time the concentrations of microbiological contaminants will decrease due to mechanisms including dilution, dispersion and die-off. Any chemical and physical heterogeneity in the water will also be smoothed out, so that its characteristics become relatively constant.
guideline	A preferred course of action, process, or procedure.
guideline value	The value for an aesthetic determinand that, if exceeded, may render the water unattractive to consumers.
haloacetic acids	Acetic acid in which one or more of the hydrogen atoms in the methyl group has been replaced by a halogen atom (chlorine, bromine or iodine).

hardness	Water hardness is defined as the concentration of multi-valent metallic cations in that water. The most common cations are calcium and magnesium and for practical purposes the sum of their concentrations expressed as CaCO ₃ is used as the measurement of hardness. Calcium and magnesium ions can combine with carbonate and bicarbonate to form what is known as carbonate or temporary hardness. This type of hardness is relatively easy and inexpensive to remove with conventional water treatment processes. Calcium and magnesium can also combine with borates, phosphates and silicates to form what is known as non-carbonate or permanent hardness that is harder and more costly to remove than carbonate hardness. Although harder water is generally more palatable than soft water it can leave deposits in pipes and on heating elements.
hazard	In this document, a microbiological or chemical determinand that may cause sickness. See also <i>contaminant</i> .
Hazchem label	A system of classifications used for the labelling of hazardous substances outlined in <i>Specification for Transportation Labels for Hazardous Substances, NZS 5417:1986</i> and <i>Code of Practice for the Transport of Hazardous Substances on Land, NZS 5433:1988</i> . Labelling requirements must comply with the <i>Toxic Substances Regulation, 1983</i> . The term Hazchem is also used as an abbreviation for hazardous chemicals.
Hazen method	<p>The colour of a water sample is determined by visual comparison with special calibrated glass colour discs. The platinum-cobalt, or Hazen method is the standard analytical procedure for measuring colour, the unit of colour being that produced by 1 mg platinum/L in the form of the chloroplatinate ion.</p> <p>The colour measured routinely in the laboratory is usually the apparent colour, which differs from the true colour because of the effect of any particulate material. When measuring apparent colour the analyst attempts to match the colour on the Hazen disc with the colour of the water, including the particulate matter. When the turbidity is high, this colour match can be very difficult and quite misleading. This method is not applicable to most highly coloured industrial liquids.</p>
head (total)	In a water reticulation system: energy contained in a water mass, produced by elevation, pressure, or velocity.
health detriment	An adverse effect on health.
health protection officer	A person so designated by the Director-General of Health under section 7A of the Health Act 1956.
helminth	All types of worm, both free-living and parasitic. For most helminths water is not a transmission route, and the parasitic species are not considered to be pathogens of concern in New Zealand's drinking-waters.
hepatotoxic	Causing damage to the liver.
hepatotoxins	Toxins (or poisons) which affect the liver.
heterogeneous	Non-uniform. Different parts of a substance, or water sample, have different chemical or physical characteristics. See also <i>homogeneous</i> .

heterotrophic organisms	Organisms which depend upon some external source of organic compounds for their source of energy and/or nutrient, for example, bacteria and parasites.
heterotrophic plate count (HPC)	A procedure for estimating the number of live heterotrophic bacteria in water and measuring changes during water treatment and distribution. Colonies can arise from pairs, chains, clusters or single cells, all of which are included in the term colony forming units (CFU). The two main methods used for HPCs are the spread or pour plate method.
highly erodible catchment	A catchment with little or no stability, water is very turbid in flood and requires extensive treatment.
homogeneous	Uniform. Different parts of a substance, or water sample, have identical chemical or physical characteristics. See also <i>heterogeneous</i> .
hospital	Means a licensed hospital within the meaning of the Hospitals Act 1957.
household unit	Means any building or group of buildings, or part of any building or group of buildings, used or intended to be used solely or principally for residential purposes and occupied or intended to be occupied exclusively as the home or residence of not more than one household; but does not include a hostel, boarding house, eating house or other commercial accommodation.
housing	The pressure vessel that is used to contain a cartridge or bag filter.
humic substances	Partially broken down organic substances that occur in water in a mainly colloidal state. Humic acids are large-molecule organic acids that dissolve in water, and are often responsible for discolouration and maybe tastes and odours.
hydraulic conductivity	The rate at which water can move through a permeable medium. It is the rate of flow of water, in metres per day, through a cross-section of one square metre under a unit hydraulic gradient. See also <i>hydraulic gradient</i> .
hydraulic gradient	The rate of change in total head per unit of distance of flow in a given direction. See also <i>head (total)</i> .
hydraulics	The mechanisms of water flow.
hydrogeology	The science of the geological and hydraulic factors relating to groundwater. The term <i>geohydrology</i> is sometimes used as a synonym for hydrogeology, although it more properly describes the study of subsurface water dynamics.
hydrology	The study of water dynamics, in and upon the earth.
hydrothermal fluid	Fluid formed during any process involving high-temperature groundwater, especially during the alteration and emplacement of minerals and the formation of hot springs and geysers. Not necessarily volcanic.
hydroxyl radical	An oxygen atom and hydrogen atom combined having no charge but having an unpaired electron. It is an extremely powerful oxidant which can be produced from dissolved ozone through a moderately high pH reaction with hydrogen peroxide or irradiation with ultra-violet light.
immuno-compromised	Describing persons in whom the immune response is reduced or defective due to immunosuppression. These people are especially vulnerable to infection.

immuno-suppressive therapy	A treatment with certain drugs which reduces the body's resistance to infection and other foreign bodies by suppressing the immune system, for example, some cancer treatments.
impounding reservoir	An area in which a raw surface water is impounded for a period of several days. Also known as <i>storage reservoir</i> , may be natural or man-made.
inactivation	Rendering organisms (usually micro-organisms) incapable of infection. Usually achieved by disinfection or by high temperatures.
indicator organism	A determinand, for example, <i>E. coli</i> or faecal coliform, that is monitored to indicate the presence of faecal contamination.
indirect intake	Intake used to draw water when there is not usually a high enough water level or it is undesirable to extract directly from a surface water, e.g <i>infiltration gallery</i> .
indirect integrity test	See integrity test.
individual drinking-water supply	An individual drinking-water supply is a stand-alone drinking-water supply that supplies less than 25 people.
industrial use	Use of water by industries. Often the largest category of water use, high demand industries include: pulp and paper, dairy, meat and food processing.
infectious	Describes an organism that can gain access to, and live in, another organism.
infiltration gallery	An artificial conduit, or series of conduits, used for collecting water, situated next to, or in, streams under layers of sands and gravel, that provides a degree of prefiltration. Usually made from interconnected, buried, open-jointed or slotted pipes. Also referred to as river galleries but will often not be the same as bank filtration.
inorganic	Describes compounds of mineral origin, for example, metal oxides or salts. See also <i>organic</i> .
institutional use	Use of water by institutions such as polytechnics, schools, prisons, military camps etc.
integrity test	direct integrity test: A physical test applied to a membrane unit to identify and isolate integrity breaches. An integrity breach is defined as one or more leaks that could result in contamination of the filtrate. The direct integrity test must be applied to the physical elements of the entire membrane unit including membranes, seals, potting material, associated valving and piping, and all other components that, under compromised conditions, could result in contamination of the filtrate. See <i>membrane filtration</i> . indirect integrity test: Involves monitoring some aspect of filtrate water quality that is indicative of the removal of particulate matter. If a continuous direct integrity test is implemented that meets the membrane filtration resolution and sensitivity criteria, continuous indirect integrity monitoring is not required.

intended use	In respect of a building, includes any reasonably foreseeable occasional other use that is not incompatible with the intended use.
intracellular	Within the cell. See also <i>extracellular</i> .
intracellular toxins	Toxins (or poisons) inside a cell or cells.
ion	An electrically charged atom or group of atoms, for example the nitrate ion NO_3^{-1} .
ISO 9000	A particular set of internationally recognised quality management standards. The old ISO 9001, 9002 and 9003 standards have all been integrated into the new ISO 9001: 2000.
jar tests	A series of tests designed to ascertain the optimum dose or mix conditions of coagulant, polyelectrolyte or flocculant. The optimum conditions are found by varying the following parameters one at a time: dose, rapid mix time, slow stir time, alkalinity and pH. Effectiveness of each can be measured by the rate of floc growth, ultimate floc size, settling velocity, turbidity, colour, aluminium, or UV absorbance of the settled or filtered water. Jar tests should be performed each time the quality of the raw water changes, or for evaluating alternative coagulants etc.
Langelier Saturation Index (LSI)	A measure of the corrosive or scale-forming nature of water, depending on whether it will dissolve or precipitate calcium carbonate. The LSI is the pH of the water minus the pH at which the water will be in equilibrium with solid calcium carbonate. It is measured on a positive/negative scale with waters of a LSI of -0.5 or lower considered to be corrosive; waters with a LSI of +0.5 or more considered to be scale forming; and waters between -0.5 +0.5 considered to be well-balanced. The LSI is calculated using the calcium hardness, alkalinity, total dissolved solids and pH and is temperature related. It does not always correlate well with plumbosolvency in New Zealand waters so is not used to define plumbosolvency in the DWSNZ.
large drinking-water supply	A drinking-water supply serving more than 10,000 people.
leachate	Water that has passed through a soil, or other material, and that contains soluble material extracted from that soil. [Strictly it is the extracted material that is the leachate, but the solution of the leachate is colloquially referred to as the leachate.]
limit of detection	The constituent concentration that, when processed through the complete analytical method, produces a signal 3.29 times the standard deviation, (assuming the result did not involve a blank determination). See Chapter 17.6 of the Guidelines, and <i>criterion of detection</i> .
linear velocity (average)	Is the true rate at which water actually moves through the sediment pore spaces, as distinct from the calculated velocity. Also referred to as <i>seepage velocity</i> .
lipid-soluble compounds	Compounds which are soluble in lipids or fats, for example, organic solvents (kerosene).

local authority	Means a territorial authority as defined in section 2 of the Local Government Act 1974.
Lowest Observed Adverse Effect Level (LOAEL)	The lowest dose of a contaminant at which a statistically significant adverse effect has been observed in a group of test animals. Comment: such a value would only be used to establish a human TDI when an appropriate NOAEL was not able to be determined. In the event that a LOAEL (rather than a NOAEL) is used as the basis for a TDI a higher uncertainty factor will usually be employed.
LSI	See Langelier Saturation Index (LSI).
LT2ESWTR	The Long Term 2 Enhanced Surface Water Treatment Rule (USEPA).
lysis	The destruction of cells. This may occur as the result of treatment processes and is a particular concern where algal cells containing toxins are involved, as the toxins may be released into the water.
major drinking-water supply	A drinking-water supply serving more than 50,000 people.
MAV	See maximum acceptable value (MAV).
maximum acceptable value (MAV)	The concentration of a determinand below which the presence of the determinand does not result in any significant risk to a consumer over a lifetime of consumption. For carcinogenic chemicals, the MAVs set in the DWSNZ generally represent a risk of one additional incidence of cancer per 100,000 people ingesting the water at the concentration of the MAV for 70 years.
Medical Officer of Health	Means a Medical Officer of Health appointed under the Health Act 1956 for a health district, and includes any Deputy Medical Officer of Health; and, for the purposes of Part IV of the Act, includes any medical practitioner acting under the direction of the Medical Officer of Health.
medium drinking-water supply	A drinking-water supply serving between 5,001 and 10,000 people.
membrane filtration	A pressure or vacuum driven separation process in which particulate matter larger than 1 µm is rejected by a non-fibrous, engineered barrier, primarily through a size-exclusion mechanism, and which has a measurable removal efficiency of a target organism that can be verified through the application of a direct integrity test. This definition is intended to include the common membrane technology classifications: microfiltration (MF), ultrafiltration (UF), nanofiltration (NF) and reverse osmosis (RO). See <i>module</i> and <i>unit</i> .
meringue dezincification	Leaching of zinc from brass fittings by an aggressive water causing a porous, weaker structure.
metabolite	A substance produced by metabolism in an organism.
MF	See microfiltration (MF).

microbiological contamination	The introduction of <i>micro-organisms</i> including <i>bacteria</i> , <i>protozoa</i> , <i>fungi</i> and <i>viruses</i> , for example, into drinking-water. These can be introduced from faecal or decaying organic material. See also <i>chemical</i> and <i>physical contamination</i> .
microfiltration (MF)	A type of relatively low pressure membrane technology in which the pore-size of the membrane is in the order of 0.1 µm, so it can remove protozoa and most bacteria. See <i>membrane filtration</i> , <i>reverse osmosis (RO)</i> , <i>nanofiltration (NF)</i> and <i>ultrafiltration (UF)</i> .
micro-organism	A very small (microscopic) organism. Includes viruses, bacteria, protozoa, algae and helminths.
Minister	Means the Minister of Health.
Ministry of Health	Means the department of the Public Service referred to by that name; and "Ministry" has a corresponding meaning.
minor drinking-water supply	A drinking-water supply serving between 501 and 5,000 people.
mixed water	Water from various sources, e.g. river, lake, spring etc, that is mixed together before the treatment plant and treated as one.
module	The smallest component of a membrane unit in which a specific membrane surface area is housed in a device with a filtrate outlet structure.
monitoring	The sampling and analysis of a drinking-water supply to test for compliance with the DWSNZ, or for process control, by detecting changes in the concentrations of its constituent determinands or deviations of these from target values. In New Zealand, monitoring is the water supplier's responsibility.
monomer	A single molecule which, when combined with a number of other similar molecules, forms a polymer. See <i>polymer</i> .
mutagenic	Causing the alteration of the genetic material of a cell in such a manner that the alteration is transmitted to subsequent generations of cells.
mycobacteria	Rodlike Gram-positive aerobic bacteria that can form filamentous branching structures. Some species are pathogenic to animals including, humans, for example, leprosy, tuberculosis.
nanofiltration (NF)	A type of membrane technology in which the pore-size of the membrane is in the order of 0.001 µm, so it can remove bacteria, viruses, protozoa and chemical substances down to molecular weights of 200–1000 daltons. The cut-off for chemical substances is sufficiently small that some disinfection by-product (DBP) precursors will be removed. See <i>membrane filtration</i> , <i>reverse osmosis (RO)</i> , <i>microfiltration (MF)</i> and <i>ultrafiltration (UF)</i> .
nephelometry	A method of quantitative analysis which involves the photometric estimation of the scattering of light by a suspension of particulate matter.
network reticulation	A network under a network utility operator's control, that is, all parts of the drinking-water distribution system, including pipes and treated water (service) reservoirs.

network utility operator	A person undertaking the piped distribution of a drinking water supply.
neurotoxins	Toxins (or poisons) that affect the nervous system.
NF	See nanofiltration (NF).
nm	Nanometre.
nominal filter pore size	Is just that, it exists in name only. It is meant to represent the size of the particles which a filter will exclude. It does not guarantee to remove particles of the same size as the nominal pore rating. It is used only to give a comparison within the same manufacturer's range. See also <i>absolute filter pore size</i> .
non-chlorinated supplies	See chlorination.
non-compliant	A drinking-water supply that does not comply with the requirements of the Drinking-water Standards for New Zealand.
non-continuously monitored chlorination	See chlorination.
non-detects	The situation when an organism is being tested for is not detected in the sample.
non-secure groundwater	Groundwater that does not meet the definition of secure groundwater.
notifiable disease	Means any notifiable infectious disease, and any other disease for the time being specified in the Second Schedule to the Health Act 1956.
notifiable infectious disease	Means any infectious disease for the time being specified in Part I of the First Schedule to the Health Act 1956.
NTU	Nephelometric turbidity unit (see Appendix A1.5.8 of DWSNZ).
nutrients	Chemical substances serving as or providing nourishment.
offensive trade	Means any trade, business, manufacture, or undertaking for the time being specified in the Third Schedule to the Health Act 1956.
(oo)cyst	Both/either oocysts and/or cysts.
oocyst	A thick walled structure within which <i>Cryptosporidium</i> zygotes develop and which serves to transfer the organism to new hosts.
operational requirement	Performance specifications necessary to ensure that an appliance or treatment process complies with its specifications.
opportunistic pathogens	A micro-organism that is not usually pathogenic and may be part of the normal microflora of the body, but under certain conditions, may cause disease.

organic	Describes compounds containing carbon, often containing C-C bonds. The term originally described compounds derived from plants and organisms. See also <i>inorganic</i> .
osmotic pressure	The pressure that must be exceeded to cause water to flow through a semi-permeable membrane. The semi-permeable membrane allows only water to pass through it, thus separating the water from dissolved and suspended material, which is left behind. The osmotic pressure is usually measured in pascals (Pa). See also <i>reverse osmosis</i> .
owner	In relation to any land, including any buildings on that land, means the person who is for the time being entitled to the rack rent thereof or who would be so entitled if the land were let to a tenant at a rack rent; and, for the purposes of sections 30, 33, and 43 of the Building Act 1991, includes the <ol style="list-style-type: none">owner of the fee simple of the land; andany person who has agreed in writing, whether conditionally or unconditionally, to purchase the land or any leasehold estate or interest in the land, or to take a lease of the land, while the agreement remains in forceany person for the time being registered under the Land Transfer Act 1952 as the proprietor of the land or premises and "ownership" has a corresponding meaning
owner	In relation to a drinking-water supply means a person who controls the supply of drinking-water to people from a drinking-water supply; and includes that person's employees, agents, lessees, and subcontractors, while carrying out duties in respect of that drinking-water supply.
oxidise	To bring about the combination of oxygen with a substance, or the removal of hydrogen from it. More generally, any reaction in which an atom or molecule loses electrons.
ozonation	Treatment of water by dissolved ozone primarily for disinfection but also for the oxidation of chemical determinands.
parameter	A coefficient or factor in an expression or equation used to process data.
parasites	Refers to <i>Giardia</i> and <i>Cryptosporidium</i> in this document.
parasitic	Living in or upon another organism and drawing nutrients from it.
partial treatment	For the purposes of grading "Partial Treatment" means a treatment plant comprising: <ul style="list-style-type: none">– filtration with chlorination– compliance with Appendix III of <i>Giardia and Giardiasis in New Zealand</i>. <i>or</i> <ul style="list-style-type: none">– chlorination alone– compliance with Appendix III of <i>Giardia and Giardiasis in New Zealand</i>.
participating small water supplies	Water supplies that serve fewer than about 500 people and that can demonstrate risks to public health are managed adequately through the implementation of an approved PHRMP or compliance schedule.

pathogen	An organism capable of inducing illness.
performance criteria	In relation to a drinking-water supply, means those qualitative or quantitative criteria that the supply is to satisfy in performing its functional requirements.
person	Includes the Crown, a corporation sole, and also a body of persons, whether corporate or unincorporated. See <i>entity</i> .
pesticide	A substance or mixture of substances used for the eradication or control of any pest. This includes behavioural and developmental modifiers, for example, plant growth regulators, desiccants or defoliants, but not fertilisers or animal remedies.
pH	A measure of the concentration of hydrogen ions in water. It is the negative logarithm to base 10 of the concentration of H ⁺ in the water. A low pH indicates an acidic water; a high pH shows the water is alkaline; a pH of 7 is neutral. The pH of water is particularly important in water treatment processes such as coagulation and disinfection.
pH meter	A meter used to measure the hydrogen ion concentration by measuring the movement of ions across the glass membrane of a pH probe. A pH meter generally consists of a probe that contains a solution of potassium chloride, a permeable membrane, and circuitry that converts the signal from the probe into a pH reading.
photolysis	The decomposition of a substance caused by light. In the environment, some organic contaminants are broken down through exposure to sunlight. The rate at which this occurs depends upon the intensity of the light, and in some cases the chemistry of the water, such as the pH.
PHRMP	See Public Health Risk Management Plan (PHRMP).
physical contamination	Contaminated of water by particulate (undissolved) matter or material. For example, contamination by windborne material such as dust. See also <i>microbiological</i> and <i>chemical contamination</i> .
physical determinands	In water quality analysis, physical properties of the water that can be measured. These include: turbidity, colour, and conductivity. See also <i>aesthetic, biological, chemical</i> and <i>radiological determinands</i> .
physical disinfection	The use of physical disinfection treatment processes to inactivate micro-organisms (as distinct from chemical processes). Physical disinfection processes include ultraviolet irradiation and membrane technologies. They do not provide a disinfection residual. See also <i>ultraviolet, inactivation, reverse osmosis</i> and <i>ultrafiltration</i> .
physical	Refers to actual [tangible] matter or material properties. See <i>chemical</i>
physical treatment processes	See <i>physical disinfection, coagulation</i> and <i>flocculation</i> .
physico-chemical	Describes a process whereby the outcome is dependant on a combination of physical and chemical processes.

plumbosolvent	Able to dissolve lead (from Latin plumbum, hence Pb).
point of supply	Means that point where there is a change of responsibility between those pipes that are part of a network reticulation system and the pipes that form part of the building; and if there is no such point, then the point of supply is the last place where the supply of water can be interrupted or stopped before it reaches the tap. This place might be a toby or a backflow prevention device or a pump or some other appliance or device.
point of use water treatment (POU)	Treatment of water directly before it is used, usually at the individual domestic premises, for example, an in-line cartridge filter fitted before a tap. See <i>domestic drinking-water treatment appliance</i> .
polishing	Means the improvement of the quality of water by removal of low concentrations of dissolved, recalcitrant organic compounds from either water intended for human consumption or wastewater that has been subjected to primary and secondary wastewater treatment. It may also refer to the removal of fine particulate matter from water being treated for human consumption. The passage of water through a charcoal filtering device is a frequently employed polishing technique.
pollution (water)	Anything causing or inducing objectionable conditions in water and affecting adversely the environment and use or uses to which the water may be put. See also <i>contamination</i> .
polyelectrolyte	A long-chained polymer capable of causing either coagulation or flocculation, depending on its type.
polymer	A substance that consists of giant molecules formed by the linkage of simple molecules (<i>monomers</i>). The linkage process is a chemical reaction called polymerisation. In water and wastewater coagulation and flocculation processes, the polymers contain electrically charged groups of atoms and are referred to as <i>polyelectrolytes</i> .
polymerase chain reaction (PCR)	<p>A chemical reaction, usually carried out with a catalyst, heat or light, and often under high pressure, in which a large number of relatively simple molecules combine to form a chain-like macromolecule.</p> <p>The PCR reaction is a means of multiplying the amount of DNA present, so that there is enough to carry out the studies desired.</p>
potable water	Drinking-water that does not contain or exhibit any determinand to an extent that exceeds its maximum acceptable value (MAV) more frequently than allowed when the water quality is measured as specified in the DWSNZ. See also <i>wholesome drinking-water</i> .
potentiometric surface	A surface that represents the level to which water will rise in tightly cased wells. If the head varies significantly with depth in the aquifer, then there may be more than one potentiometric surface. The water table is a particular potentiometric surface for an unconfined aquifer. See also <i>water table</i> .

precipitate	<ol style="list-style-type: none">1. (vb) The formation of solid particles in a solution. Generally, the settling out of small particles.2. (vb) The settling out of water from cloud, in the form of rain, hail, snow, etc. <p>(n) The particulate matter which settles out when dissolved matter come out of solution in a liquid.</p>
precision	A measure of the degree of agreement among replicate analyses of a sample, usually expressed as the standard deviation (s). See <i>accuracy</i> and <i>bias</i> .
preservative	A chemical substance that prevents changes in the composition or characteristics of the substance(s) of interest in a sample when the sample is stored.
presumptive coliforms	Bacteria whose identification in the early stages of bacterial examination highlight the need for further identification of coliform organisms. If absent, it is not necessary to proceed with further identification of coliform organisms. See also <i>E. coli</i> , <i>faecal coliforms</i> and <i>total coliforms</i> .
preventive measure	An action taken, or process, designed to reduce the likelihood of an event happening. See also <i>event</i> and <i>corrective action</i> .
priority class	One of four classes of determinand defined in the DWSNZ. The priority classes are ranked according to the determinand's potential impact on public health if present in excess of its maximum acceptable value (MAV) in drinking-water and the quantity of the determinand present in the water supply.
private water supply	Any mode, system, or works for the collection, supply, and distribution of wholesome drinking-water in any district that is not operated by a local authority or by any person or persons authorised by any enactment to undertake the supply of such water to the public.
programmable logic controller	Microcomputer (PLC) used to control processes, for example, treatment processes.
property	Includes land, buildings, and goods; but does not include incorporeal forms of property.
protected catchment	A catchment that has major points of access fenced and is controlled so there is only strictly controlled human access and limited feral animals. In most New Zealand examples controlled culling will be required in order to achieve a satisfactory level of feral animals.
protozoa	The Priority 1 protozoa are <i>Giardia</i> and <i>Cryptosporidium</i> . See <i>priority class</i> .
protozoan cysts	A protozoan cyst is the inert stage of a protozoan's lifecycle. It is characterised by having an impervious shell and being very difficult to kill with conventional water treatment methods. In this stage of its cycle the protozoan will not cause disease.
public drinking-water supply	See <i>community drinking-water supply</i> .

public health agency/ hospital or health service provider	The Ministry of Health, District Health Board and designated officers of the Ministry of Health.
public health risk management plan (PHRMP)	<p>Identifies the elements present in a supply.</p> <p>Identifies which of the four main barriers to contaminants are in place.</p> <p>Sets out a risk information table appropriate for the supply.</p> <p>Includes an improvements schedule, which identifies the preventive measures that have yet to be put in place; prioritises them for attention based on the risk they present to health and the availability of resources to provide them; sets a date by which they should be put in place; and identifies who has responsibility for doing this.</p> <p>Notes other quality assurance systems that have links to the PHRMP.</p> <p>Provides contingency plans applicable to the supply.</p> <p>Provides instructions for reviewing the PHRMP's performance and how it should be reviewed.</p> <p>Provides instructions for reporting: what reports should contain, who should receive reports and how often.</p>
public water supply	Means any mode, system, or works for the collection, supply, and distribution of wholesome drinking-water in any district operated by a local authority or by any person or persons authorised by any enactment to undertake the supply of such water to the public. See <i>community drinking-water supply</i> .
qualitative analysis	An analysis which shows what a substance is, but not how much of it is present.
quality assurance	A means of maintaining good management of a process by systematically keeping records, checking equipment and personnel performance and procedures, for example, the ISO 9001:2000 Quality Management System standard.
quality control	The monitoring of a product's quality by sampling and measuring to check it complies with specifications.
quantitative analysis	An analysis which measures the size, extension, weight, number of, or amount, of a determinand.
radiological assessment	The determination of the radioactivity content in a water sample.
radiological determinands	In water quality analysis, radioactive substances, factors or elements in the drinking-water, which are determinable. Radioactivity in drinking-water is principally derived from the leaching of radionuclides from rocks and soil and from the deposition of radionuclides from the atmosphere. Examples are total alpha activity, excluding radon; total beta activity, including potassium and radon concentration.
radionuclide	A radioactive atomic nucleus.

rapid sand filter	A filter that can have one or more layers of graded sand and/or anthracite, designed to filter out solids at loading rates of 5 - 10 m ³ /m ² /h (more correctly m ³ /m ² .h or m/h). Rapid sand filters only provide effective treatment when used in conjunction with a <i>coagulant</i> .
raw water	Water that is after the abstraction point but has not yet received any treatment in the process of making it suitable for drinking.
recharge zone	A zone in which infiltration water moves downward into an aquifer.
RED	See reduction equivalent dose (RED).
reduced state	The state of a substance in which oxygen has been removed from a substance, or hydrogen or an electron has been added to it.
reduction equivalent dose (RED)	A calculated dose for a flow-through UV reactor that is based on biosimetry. The RED is set equal to the UV dose in a collimated beam test that achieves the same level of inactivation of the challenge organism as measured for the flow-through reactor during bioassay testing.
redundancy	Provision of more equipment than the minimum necessary for normal operation in order to provide extra safety in the event of a breakdown.
referee method	The analytical methods definitive for demonstrating compliance with the DWSNZ. Alternative methods may be used, but these must provide results comparable to those obtained by the referee methods. In the event of any dispute about differences in analytical results, results obtained using the referee method will be deemed to be correct.
Register of Community Drinking-Water Supplies and Suppliers in New Zealand	A list of community drinking-water supplies in New Zealand published by the Ministry of Health. The register contains each drinking-water supply's details about water sources, treatment plants, distribution zones, site identification codes, Priority 2 determinands and public health grading.
regolith	The layer of unconsolidated solid material above the bedrock.
relative standard deviation	See coefficient of variation.
remedial action	Action taken in the event of a transgression to protect public health and to reduce the likelihood of the transgression recurring for the same reason.
renal dialysis	A method of treatment of patients with a kidney disorder. Involves the diffusion of unwanted body electrolytes out of the patient across a semi-permeable membrane into dialysis water on the other side of the membrane. The dialysis water must be of a high quality to avoid the risk of any contaminants in the dialysis water diffusing back across the membrane and accumulating in the patient. The DWSNZ do not guarantee that water that meets the DWSNZ is suitable for renal dialysis.
reservoir	Storage facility for raw or treated water for supply.

residence time determination	Analysis of tritium, chlorofluorocarbon or sulphur hexafluoride concentrations in groundwater to determine the time the water has been isolated from the atmosphere.
resins	High molecular weight materials, often of variable but controlled molecular weight, which soften at high temperatures. Synthetic resins are formed by polymerisation. They are used in ion-exchange water treatment systems to soften water, or remove dissolved metals. Natural resins occur in vegetable products (rosin) or are secreted by insects (shellac).
reticulation	The network of pipes, pumps and service reservoirs that delivers the drinking-water from the water treatment plant to the consumers' boundary. See <i>network reticulation</i> .
reticulation zone	Area in which water is distributed from the treatment plant to the consumer's connection via pipes.
reverse osmosis (RO)	The flow of water through a semi-permeable membrane under a pressure that is higher than the water's osmotic pressure. The semi-permeable membrane allows only water to pass through it, thus separating the water from most dissolved and suspended material, which is left behind. See also <i>membrane filtration</i> , <i>microfiltration (MF)</i> , <i>ultrafiltration (UF)</i> and <i>nanofiltration (NF)</i> .
riparian strip	A strip of land beside water, usually legally defined, set aside for land and vegetation conservation purposes.
risk	The chance of something happening that will have an impact upon objectives (AS/NZS 4360:1999). Risk is measured in terms of consequences and likelihood. In this document, the objectives are the maintenance of water quality and therefore the protection of public health.
risk analysis	A systematic use of available information to determine how the likelihood that specified events may occur and the magnitude of their consequences.
risk assessment	An estimate of the likelihood of introducing a biological, chemical or physical agent into the drinking-water that has the potential to cause harm when present to an unacceptable level. The overall process of estimating the risk arising from the introduction of a biological, chemical or physical agent into the drinking-water, and evaluating this risk by comparison with predetermined levels of risk considered acceptable. Estimation of the risk is known as risk analysis and considers the likelihood of hazards entering the water and the magnitude of the consequences of their entry.
risk information table	Table in the Public Health Risk Management Plan or the PHRMP Guides providing detailed information that can be used to manage the risks linked to a particular supply element. It contains lists of events and the hazards they may introduce into the water; a guide to the level of risk created by the event; possible causes of the event; preventive measures for each cause; checks to determine whether preventive measures are working; and corrective actions that should be taken should an event occur.
risk management	The process of managing the risk caused by the likely hazards in a drinking water.

river gallery	An infiltration gallery used to abstract water from a river. It may be in the river bank or the river bed.
RO	See reverse osmosis (RO).
salt drift	The transport of salts through, and their deposit from, the atmosphere. Also referred to as cyclic salts.
sanitary survey	A survey and analysis of the physical environment for the purpose of identifying the existence and risk posed by existing and potential sources of health hazards and environmental contamination. See sanitary inspection.
SCADA	Means a Supervisory Control and Data Acquisition system for the display and manipulation of control system data.
screen (well)	A tubular filtering device fitted inside a bore hole with either slots, holes, gauze, or continuous-wire wrap used to keep sediment from entering the water in a bore. Usually placed at the end of a bore casing to complete a bore, it is where water enters the bore.
second stage filtration	A filtration process consisting of rapid sand, dual media, GAC, or other fine grain media in a separate stage following rapid sand or dual media filtration. The first stage of filtration must be preceded by a coagulation step and both filtration stages must treat 100percent of the flow. A cap, such as GAC, on a single stage of filtration does not constitute second stage filtration. The DWSNZ also allows membrane and cartridge filters.
secure groundwater	Water that is free from surface influences and free from contamination by harmful micro-organisms. It must be abstracted via a bore head demonstrated to provide sanitary protection. Springs and supplies from shallow aquifers with bore intakes less than 10 m are excluded.
secure well-head or bore head	A well-head that incorporates appropriate measures to prevent or minimise the risk of groundwater contamination. Measures include: <ol style="list-style-type: none">1. sealed pumping/piping systems including backflow prevention2. seals between the well casing, pipework and surrounding ground3. restrictions on any potentially contaminating land use or activity in the vicinity of the well-head.
sedimentation	The process in which solid particles settle out of the water being treated in a clarifier or settling tank.
self-supplied drinking-water supply	A supply of water, including without limitation any water from a river, lake, bore, spring or a tank which is intended for domestic and food preparation use and is exclusively for one or more buildings (not being a single residential dwelling) where the building is owned or occupied by the owner of that drinking-water supply and where the building or buildings

self-supplied drinking-water supply	<ol style="list-style-type: none"> 1) serves a community purpose (e.g. schools, marae, hospitals); or 2) provides hospitality for remuneration (e.g. homestays, camping grounds); or 3) provides a place of employment for persons other than the occupier; and includes: <ol style="list-style-type: none"> a) two or more buildings which on completion of any building work are intended to be managed as one building with a common use and a common set of ownership arrangements; or b) any other two or more buildings.
(continued)	Self-supplied drinking-water supplier has the corresponding meaning.
sensor	A device that senses a measured parameter, such as a pH electrode. Most sensors are transducers.
service reservoir	A reservoir present in the network reticulation to manage water flow and pressure.
setback distance	In relation to bank filtration, the distance between the vertical bore and the surface water when the river/stream is in a flood with a 1 percent probability of recurrence, (some-times called a 'one in 100 year' flood).
short-term excursion	The exceedence of the MAV of a contaminant for a short time which does not represent a public health risk.
SI units	A system of coherent metric units (Système Internationale d'Unités) adopted by the General Conference on Weights and Measures, the international authority on units.
silicosis	A lung disease produced by inhaling silica dust particles. Silica stimulates fibrosis of lung tissue, which produces progressive breathlessness and considerably increased susceptibility to tuberculosis.
slow sand filtration	A filter that consists of a bed of fine sand and relies on a biologically active layer on top of the sand, called <i>Schmutzdecke</i> , to filter out particles. The filtration rate is much slower than rapid gravity filtration.
sludge	Semisolid material such as the solids that settle out in a clarifier.
sludge blanket	Consists of floc particles, and suspended solids adsorbed on to the floc, which grows to form a layer or blanket during the flocculation process. The sludge blanket can float on top of the water surface, or be submerged within a water treatment tank. In the second case, water flows upwards through the blanket, which is being used as a filtration system. This is often referred to as an upward flow sludge blanket. See also <i>floc</i> , <i>adsorb</i> and <i>flocculation</i> .
small drinking-water supply	A drinking-water supply serving between 101 and 500 people.
solute	The substance dissolved in a solvent to yield a solution. See also <i>solvent</i> .
solvent	The major constituent of a solution. The solvent is the substance that dissolves the solute. See also <i>solute</i> .
solvent rinsing	A process used during the cleansing of a container in preparation for sampling. After the container is acid washed it may then be solvent rinsed. See also <i>acid washing</i> .

somatic	Relating to cells of an organisms other than the germ cells.
source	Point or water body from which raw water is drawn to supply a drinking-water supply.
sparge	To remove volatile substances from a solution, normally by passing large volumes of air through it. Also referred to as <i>air stripping</i> or <i>aeration</i> .
spectrophotometer	An instrument (a spectrometer) for measuring the intensity of light at different wavelengths of the spectrum (infrared, visible or ultraviolet).
spiked samples	Used in quality assurance in laboratory analysis. A known quantity of a substance is deliberately introduced into a sample during an analysis, to check that recovery of that substance is satisfactory.
spore	A single or several-celled reproductive structure that detaches from the parent and gives rise, directly or indirectly, to a new individual. They often serve for very rapid increases in the population, as when produced in enormous numbers and distributed far and wide by wind, water, animals, etc. Others are resting spores, enabling survival through unfavourable periods. Spores occur in all plant groups, algae, fungi, bacteria, cyanobacteria, protozoa and other protista.
spring	Occurs when groundwater moves along the upper plane of an impervious rock formation that ends at the surface, or may also occur at rock fissures. This discharge is susceptible to surface contamination from domestic, industrial and agricultural waste discharges.
stable catchment	Catchment that is very stable, can be covered in bush; water turbidity does not deteriorate considerably when in flood. Typically a <i>bushed catchment</i> .
standard deviation (s)	<p>If a measurement is repeated many times under essentially identical conditions, the results of each measurement (x) will be distributed randomly about the mean value. If an infinite number of measurements were made, the true mean would be found, with all the results appearing about the mean in a normal distribution. Measurements cannot be made an infinite number of times. Therefore, the true mean is estimated using a property of the normal distribution curve, the standard deviation (s), where:</p> $s = \left[\sum (x - \bar{x})^2 / (n - 1) \right]^{1/2}$ <p>where:</p> <p>x is the measured value</p> <p>\bar{x} is the estimated mean</p> <p>n is the number of measurements made.</p>
standard deviation(s)	The standard deviation fixes the spread of the normal distribution and includes a fixed fraction of the values making up the curve. For example, 68.27 percent of the measurements lie within one standard deviation of the mean, 95.45 percent of the measurements lie within two standard deviations of the mean and 99.70 percent of the measurements lie within three standard deviations of the mean. In common usage, these are rounded off to 68 percent, 95 percent and 99 percent respectively. See coefficient of variation.
(continued)	

standard plate count	See <i>heterotrophic plate count</i> .
standardised variance	Standardised variance is the standard deviation (s) squared (equals variance or s^2), divided by the estimate of the mean (\bar{x}), that is: s^2/\bar{x} <p>Multiply by 100 to express the value as a percentage. The standardised variance is smaller than the coefficient of variation when the standard deviation is less than one but greater when the standard deviation is greater than one. Nitrate concentrations are frequently close to the limit of detection, which can result in a high coefficient of variation. The standardised variance has been used in assessing the variation in nitrate data, as it provides a better match with known groundwater security status than the coefficient of variation.</p>
static water head	The head of water in the reticulation system under no flow conditions, (typical of conditions in the early hours of the morning).
sterilisation	The treatment of water to kill virtually <u>all</u> living organisms in the water. Methods of sterilisation are heat and steam treatment, e.g. autoclaving, heat treatment by itself. Superchlorination at over 20 mg/L with long contact times is often termed sterilisation.
storage reservoir	An area in which raw surface water is impounded for a period of several days. It may be natural or man-made. See <i>impounding reservoir</i> .
streaming current detector (SCD)	Apparatus used to measure the charge on particles in water. Particles will most easily coagulate when charges they carry have been neutralised by coagulant addition. By measuring the amount of charge present the coagulant demand in water can be calculated and used to control the coagulant dose rate that is applied in proportion to the demand.
substrate	A subsurface rock or soil layer. Alternatively a solid medium on which micro-organisms grow. See also <i>chromogenic substrate</i> .
supernatant	The clear fluid that overlies the floc or the denser fluid in a two phase system. In a water clarifier, the supernatant is removed from above the solids that have settled from suspension. Also referred to as overflow.
supersaturated	An unstable solution that contains more solute than its solubility allows. It tends to precipitate the excess solute. See also <i>solute</i> .
supplier	Any person or body that supplies water (other than bottled water) for drinking. See also <i>water supplier</i> .
supply element	A physical or operational component of a water supply, e.g. a reservoir, filter, etc.
supply pressure	This is the pressure at which water is fed to consumers. The pressure at all points in the supply system should be at least 200 - 300 Kpa, with a minimum pressure of 100 Kpa.
supply stage	One of the three major sections composing a supply. The supply stages are the raw water, the treatment processes, and the distribution system.

supply sub-element	A sub-component of a supply element. These components are identified separately because each may need to be treated differently for the purposes of public health risk management. The element disinfection has the sub-elements of chlorination, chlorine dioxide treatment, ozonation and ultra-violet irradiation.
supply zone	See <i>distribution zone</i> .
surface water	The water on the land surface. It can be running (as in streams and rivers) or quiescent (as in lakes, reservoirs, impoundments and ponds). Surface water is produced by run-off of precipitation and by groundwater seeping through the top layers of soil. Surface water can also be defined as all water open to the atmosphere and subject to surface run-off.
surrogate	A determinand used to assess the likely presence or concentration of another determinand that is difficult to determine directly. For example, <i>E. coli</i> is used to assess the likely presence of specific pathogenic bacteria, because it is a good indicator organism and is easier to test for than the pathogens.
surveillance	The process of checking that the management of drinking-water supplies conforms to the specifications in the DWSNZ. Usually conducted by the public health agency.
suspended solids concentration	The particulate constituents of a mixture, which are not in solution but suspended in the water, and are retained on a filter medium. The type of filter must be specified.
synergism	The working together of two or more substances to produce a result that is greater than the sum of their individual effects. For example, when the toxicity of a mixture of chemicals is greater than that which would be expected from the simple summation of the toxicities of the individual chemicals present in the mixture.
tankered water	Water collected from an external source and delivered in a tank to a consumer's drinking-water storage system.
taste and odour	Chemical or biological constituents can contribute tastes and odours to water. The most common biological causes are excessive amounts of algae present in the water. Control can be by oxidation of chemical causes or disinfection or activated carbon adsorption for biological causes.
temporary drinking-water supply	Means a drinking-water supply that: <ol style="list-style-type: none">1. supplies drinking-water to a place on a temporary basis for a particular event, function, or gathering; or2. from time to time supplies drinking-water to more than 24 people, but not for more than 59 days in any 12 month period; or3. supplies drinking-water on a temporary basis when a permanent drinking-water supply is not functioning for any reason, and temporary drinking-water supplier has the corresponding meaning.
teratogen	Substance that causes abnormal embryos. See also <i>carcinogen</i> and <i>mutagen</i> .
test result	The test result for a determinand concentration is the concentration actually measured by the analyst before any correction is made for experimental uncertainty.

thermotolerant coliforms	A subgroup of total coliforms that will grow on a specific selective medium when incubated at $44.5 \pm 0.2^\circ\text{C}$. The presence of faecal coliforms indicates that faecal contamination has probably occurred and that steps need to be taken to ensure pathogens are not present. Included as faecal coliforms are: <i>Klebsiella</i> and <i>E. coli</i> . See also <i>presumptive coliforms</i> .
titration	A process for determining the volume of one solution required to react quantitatively with a given volume of another. One solution is added to the other, a small amount at a time until just sufficient has been added to complete the reaction. Titrations may be performed manually from a burette or carried out automatically.
tolerable daily intake (TDI)	The intake level in the human that is confidently believed to be without significant adverse health effects. Essentially the same as ADI (Acceptable Daily Intake), except that the latter tends to refer to a level that has been established formally by the World Health Organization or some other authority.
tolerable risk	WHO considers the tolerable lifetime excess risk to be 10^{-5} for illness due to non-threshold chemicals and 10^{-4} for illness due to pathogenic organisms.
total coliforms	Genera in the family <i>Enterobacteriaceae</i> . Bacteria that will grow on a specific selective medium when incubated at $35^\circ\text{C} \pm 0.2^\circ\text{C}$. Used to indicate the probable contamination of water by organic material and that the possibility of faecal contamination needs to be checked. Total coliforms include the genera <i>Erwinia</i> , <i>Klebsiella</i> , <i>Escherichia</i> , <i>Citrobacter</i> and <i>Enterobacter</i> . See also faecal coliforms and presumptive coliforms.
total dissolved solids	It is the sum of the inorganic salts and the dissolved organic matter. The principal ions contributing to TDS are carbonate, bicarbonate, chloride, sulphate, nitrate, silica, sodium, potassium, calcium and magnesium. Also refer to the datasheets.
transducer	A device that converts a signal from one signal type to another, e.g. pressure (P) to electrical current (mA).
transgression	Occurs when a determinand of any priority class that is present in the sample exceeds the maximum acceptable value (MAV) (a MAV transgression) or its allowable concentration specified in the compliance criteria or when the transgression limit of an operational requirement is exceeded (a performance transgression).
transgression limit	The limit in the DWSNZ (MAV or operational requirement) that when exceeded defines a transgression. A control limit will be lower than a transgression limit.
treatability	The suitability and ease with which water can be treated and used in a supply. The treatability of a water depends, for example, on its turbidity, alkalinity, pH, volume of water able to be supplied, and rate of change of these parameters.

treatment	The processes linking the source to the reticulation, generally designed to improve the water quality and ideally to bring the water up to a potable standard. In some drinking-water supplies it may be merely the point at which the source water becomes regarded as drinking-water. See <i>water treatment process</i> .
treatment plant	Facility used to treat raw water to bring it up to potable level for a community. See <i>water treatment plant</i> .
trihalomethanes (THMs)	A group of by-products arising from the chemical disinfection of water. Refer also to the datasheets.
trophozoite	The flagellated (free-swimming) form of some protozoan parasites.
true colour	The colour of water resulting from substances which are totally in solution; not to be mistaken for apparent colour resulting from colloidal or suspended matter in addition to the dissolved substances. The colour is measured in Hazen units.
tube settler	A device using bundles of tubes to let solids in water settle to the bottom for removal by conventional sludge collection; sometimes used in sedimentation basins and clarifiers to improve particle removal.
turbidimeter	A turbidimeter is an instrument used to measure the turbidity of water. A sample cell of water is placed in the instrument and a beam of light is shone through the sample. Light coming off at a 90° angle is measured, the ratio of the intensity of light reflected at 90° to the intensity of light shone into the sample is calculated and displayed as a turbidity in NTU.
turbidity	An indirect measure of the suspended particles in a sample that cause loss of clarity by scattering light. For the DWSNZ, turbidity is measured by nephelometry.
UF	See <i>ultrafiltration</i> (UF).
ultrafiltration (UF)	<p>A method of filtration in which particles of colloidal dimensions are separated from molecular and ionic substances by drawing the colloidal suspension (sol) through a membrane whose capillaries are very small (in the order of 0.003 µm). It is able to remove protozoa, bacteria and viruses from the water.</p> <p>Ultrafiltration is not simply a sieve effect, but depends on the electrical conditions of the membrane and colloid. See <i>membrane filtration</i>, <i>microfiltration</i> (MF), <i>nanofiltration</i> (NF) and <i>reverse osmosis</i> (RO).</p>
ultraviolet light (UV)	Radiation that has a wavelength shorter than 400 nm and that is therefore outside the wavelength range visible to the human eye.
ultraviolet irradiation	Ultraviolet light has wavelengths in the band between visible light and X-rays, i.e. ~13-397 nm. Because nucleic acids absorb energy in the UV range of the electromagnetic spectrum, UV radiation can lead to cell damage by production of thymidine dimers, chain breakage and cytosine hydration, with consequent impairment of DNA replication unless repaired.

uncertainty	A parameter associated with the result of a measurement that characterises the dispersion of the values that could reasonably be attributed to the determinand. E.g. the greatest extent to which the measured value of a determinand concentration could differ from the “true” concentration is the test measurement uncertainty.
unconfined aquifer	A saturated water bearing formation that has a free water table and is not protected by an aquiclude from surface contamination.
undisinfected water	Water that has not received any disinfection.
unit	A membrane unit is defined as a group of membrane modules that share common valving that allows the unit to be isolated from the rest of the system for testing or maintenance.
United States Environmental Protection Agency (USEPA)	An agency of the federal United States government founded in 1970 with a mission to protect human health and the environment.
unloading	A breakthrough of particles held on a filter, usually caused by a pressure surge or other increase in the filtration rate.
unsaturated zone	The zone between the land surface and the water table. It includes the root zone, intermediate zone, and capillary fringe. The pore spaces contain water at less than atmospheric pressure, as well as air and other gases. Saturated bodies, such as perched groundwater, may exist in the unsaturated zone. Also referred to as the zone of aeration and vadose zone.
USEPA	See United States Environmental Protection Agency (USEPA).
UV	See ultraviolet light (UV).
UV disinfection	Disinfection using electromagnetic radiation (light) in the range of 200–400 nm.
UV lamps	LP lamp: A mercury vapour lamp that operates at an internal pressure of 0.001–0.01 torr (2×10^{-5} to 2×10^{-4} psi) and electrical input of 0.5 W/cm. This results in essentially monochromatic light output at 254 nm. LPHO lamp: An LP mercury vapour lamp that operates under increased electrical input (1.5–10 W/cm), resulting in a higher UV intensity than LP lamps. It also has essentially monochromatic light output at 254 nm. MP lamp: A mercury vapour lamp that operates at an internal pressure of 100–10,000 torr (2–200 psi) and electrical input of 50–150 W/cm. This results in polychromatic (or broad spectrum) output of UV and visible light at multiple wavelengths, including the germicidal range.

vacuoles	Membrane-bound regions within the cytoplasm, containing air and fluid. They support the growth of bacteria such as <i>Legionella</i> . Vacuoles are absent from the cells of bacteria and cyanobacteria.
validation test	Consists of establishing the operating conditions under which a process can deliver specified compliance requirements, then demonstrating whether a particular piece of equipment achieves these operating conditions.
vector	A living carrier of infectious organisms, for example, some amoebae. Non-living carriers, for example needles, are called “fomites”.
very small drinking-water supply	A drinking-water supply serving between 25 and 100 people.
viable	Means showing metabolic activity. This is usually demonstrated by an organism’s ability to multiply in an artificial or living substrate.
virulent	Means a pathogen that is not only able to infect another organisms, but also to cause disease in the host organism.
virus	A very small parasitic organism that can reproduce only if it can colonise a living cell by hi-jacking some of the host cell’s metabolic processes. Submicroscopic particles of nucleic material enclosed in a protein coat. Viruses are responsible for several waterborne diseases such as infectious hepatitis and poliomyelitis (polio).
volatile	Having a low boiling or subliming temperature (a high vapour pressure).
vulnerable population	Includes the populations of preschool facilities, primary schools, medical care facilities and aged care facilities and other at-risk groups as defined by the Ministry of Health.
water quality standards	The MAVs specified for health significant determinands and indicator organisms in the DWSNZ.
water supplier or water supply authority	Any person or entity that owns, or is responsible for operating, a drinking-water supply.
water table	The surface in an unconfined aquifer or confining bed at which pore water pressure is atmospheric. It can be measured by installing shallow wells extending a few metres into the zone of saturation and then measuring the water level in those wells.
water treatment plant	The point where the drinking-water supply enters the distribution system, regardless of the treatment process. See <i>treatment plant</i> .
water treatment process	A chemical, biological or physical process used to enhance the quality of a drinking-water supply before its distribution.
water treatment system	The system used to treat water and deliver it to consumers.
waterborne diseases	Disease communicated or propagated by use of contaminated drinking water.

well-head	The physical structure, facility or device at the land surface from which groundwater is abstracted from subsurface water-bearing formations.
WHO	See World Health Organization (WHO).
wholesome drinking-water	Potable water that does not contain any determinands that exceed the guideline values for aesthetic determinands in the DWSNZ.
World Health Organization (WHO)	An agency of the United Nations, founded in 1948. Its objective is the attainment by all peoples of the highest possible level of health (physical, mental and social, and not merely the absence of disease or infirmity).
worms	Worms of the Phylum Helminth, contains numerous sub-groups that include flatworms, leeches and tapeworms. Surface water supplies can contain many different types of worms, some of which are pathogenic and may be communicated by ingestion.
yield	In water supplies: the amount of water that can be extracted from a particular source.