



Reference Codes Report

Borehole information

Information related to boreholes, including drilling details, construction, lithology, stratigraphy, aquifers

Aquifer types

Definition: Broad categorisation of aquifers into types, generally into those formally identified by departmental hydrogeologists, and those non-formally identified within external reports.

Reference Name	Description
Reported Screened Aquifer	Reported Screened Aquifer
Screened DWAID Aquifer	Screened DWAID Aquifer

Borehole drill types

Definition: The method use to excavate earth material from the subsurface, primarily for boreholes

Reference Name	Description
(none)	(none)
Air drill	Air drill
Auger	Auger
Cable tool	Cable tool
Diamond core	Diamond core
Direct push	Direct push
Hollow stem auger	Hollow stem auger
Percussion	Percussion
Reverse circulation	Reverse circulation
Reverse circulation air core	Reverse circulation air core
Rotary air blast	Rotary air blast
Rotary air drill	Rotary air drill
Rotary drill	Rotary drill
Rotary hammer	Rotary hammer
Rotary mud drill	Rotary mud drill
Rotary percussion	Rotary percussion
Rotary reverse circulation	Rotary reverse circulation
See construction method description	See construction method description
Sludge	Sludge
Sonic coring	Sonic coring
Unknown	Unknown
Wireline	Wireline

Construction elements

Definition: A separate identifiable part or set of parts that make up a bore; includes any device above or below ground level.

Reference Name	Description
Annular Fill	Annular Fill: material used to fill a part of the excavated hole (annulus space) between the borehole wall and casing or between the two casings. This is different to the seal because it may allow lateral leakage of water through the material.

Casing	Casing: a plain pipe (tube) inserted into the drilled hole. Used as a temporary or permanent lining for the well / bore and that does not includes slots or perforation intervals. It can be made from different types of material such as steel, stainless steel, GI, ABS, thermoplastic or fibreglass.
Crossover/Reducer	Crossover/Reducer: a fitting used to allow casings or pipes of different diameters to be joined together.
Drilled hole	Drilled hole: dimensions of the drilled hole prior to construction.
End cap	End cap: an element used to seal the base of the casing. It is attached or welded to the end of the casing string (line).
Float shoe	Float shoe: an element used to guide the casing into the borehole. The check-valve assembly within the float-shoe prevents the flow of fluids into the casing or prevents grout from re-entering the casing.
Flush mounted cover	Flush mounted cover: the apparatus for covering the top of the bore, installed to cover and protect the bore. Installed with a lockable cover, which can be easily removed to allow access to the bore. Casing is cut off at or just below the ground level.
Head works	Head works: the name Head Works is a general name which is used for any of the construction elements installed above ground level (approximately), where details of the specific elements have not been provided or captured.
Horizontal spear	Horizontal spear: a small pipe placed horizontally in a dug hole (or shallow bore drilled by simple methods) in unconsolidated sediments for groundwater extraction.
Inlet - Filter Sock	Inlet - Filter Sock: an element that is fitted outside the slotted casing (screened inlet) to exclude very fine soil material. (A screened inlet is part of the bore/well construction that allows intake of groundwater into the pipe/casing).
Inlet - Open	Inlet - Open: where there is no screen installed. Casing is generally installed into the top of the rock formation, and the high permeability stable aquifer is completely open to the borehole. (An inlet is part of the bore/well construction that allows intake of groundwater into the pipe/casing).
Inlet - Other	Inlet - Other: the inlet type has been describe in the report but has no matching element name in WIN. (An inlet is part of the bore/well construction that allows intake of groundwater into the pipe/casing). Needs to be described in the Element Comment field.
Inlet - Perforated	Inlet - Perforated: a series of holes is punched or cut into the casing. Can be machine or hand perforated. (An inlet is part of the bore/well construction that allows intake of groundwater into the pipe/casing).
Inlet - Screen	Inlet - Screen: an element that allows ingress of water while filtering out sediments, and where the specific type of screen has not been described. (An inlet is part of the bore/well construction that allows intake of groundwater into the pipe/casing).
Inlet - Slotted	Inlet - Slotted: screen that uses vertical slots. Made by cutting torch in steel pipes or machine slotting in PVC, FRP and ABS pipes. (An inlet is part of the bore/well construction that allows intake of groundwater into the pipe/casing).
Inlet - Unknown	Inlet - Unknown: specific inlet type is not known, e.g. slotted casing, open hole. (An inlet is part of the bore/well construction that allows intake of groundwater into the pipe/casing).
Inlet - Wedgewire	Inlet - Wedgewire: water well screen is made of supporting rods and wire screening strips. The supporting rod can be round wire, triangular wire or trapezoid wire. The screening filter is made of triangular wire (V-shape wire). (An inlet is part of the bore/well construction that allows intake of groundwater into the pipe/casing).
Inlet - Wire-wound	Inlet - Wire-wound: a prefabricated frame (usually stainless steel) is wrapped with stainless steel wire creating a specified aperture inlet. The construction allows a precise adoption of slot sizes accordingly to the very small tolerances within the grain size distribution curve. (An inlet is part of the bore/well construction that allows intake of groundwater into the pipe/casing).
Open	Open: no construction exists in the borehole for the depth interval specified.
Other	Other: element not listed (describe in the element comment field).
Packer	Packer: a special fitting attached to the casing that has the same function as a seal. The packer hydraulically isolates a section of the annulus or hole at a specific point for testing, sampling or production purposes.
Plug	Plug: an element that prevents leakage (hydraulically isolates) at certain points within a construction element.
Pump	Pump: a pump installed in the bore / well to lift water to the ground surface and into the required point of use. For shallow bores the pump is often installed at ground level. For deeper bores the pump is installed within the casing, with the pump inlet below the pump.
Pump intake	Pump intake: this refers to the level of the pump intake pipe in the well casing, where water enters the pump. Generally, the intake of the pump should not be placed within the screen, but on rare occasions it may be.

Seal	Seal: a part of the excavated hole (annulus space) between the borehole wall and casing or between two casing walls and filled with impervious material that seals (hydraulically isolates) the annulus space to prevent surface run off, subsoil contamination, or pollution from reaching the aquifer. This seal prevents water movement down the casing from the surface or between the aquifers, or prevents lateral leakage, or to seal off a poor quality aquifer.
Standpipe	Standpipe: pipe or tubing that is designed to protect bore casing that protrudes above the ground.
Sub-surface Pit	Sub-surface Pit: a well liner, constructed as the first below-ground element. The diameter of the liner is much bigger than the casing diameter. Usually the material used for the liner is concrete. The casing is usually placed inside the sub-surface liner and below ground level.
Sump	Sump: a type of casing situated below the well screen to prevent silting of the screen over the time. The sump collects small particles that enter through the screen during operation of the bore (e.g. bore development, pump testing, production). Sumps will vary in length depending on lithology, screen type and project needs. The collection sump and bottom cap are connected to the well screen.
Surface block	Surface block: a block of concrete or cement, which covers the surface surrounding the bore and protects the borehole, aquifer or construction elements.
Unknown	Unknown: Unknown element.
Valve	Valve: a device used to close off or regulate the flow of water through a pipe, typically used to prevent the flow of water from the bore to the surface.
Void	Void: the space (void) between the end of the construction and the bottom of the drilled hole. Does not refer to the space between the hole wall and the casing.
Void Fill	Void Fill: material used to fill the space (void) between the end of the construction and the bottom of the drilled hole. Also, material used to backfill an open hole (unconstructed). Material may be impermeable or hydraulically transmissive.

Construction materials

Definition: The material used for a specific borehole construction element (see definition for Construction elements).

Reference Name	Description
ABS (Acrylonitrile-butadiene-styrene)	Acrylonitrile-Butadiene-Styrene well casing. Thermoplastic ABS well casing is made from a low density material with a higher tensile strength, more heat resistance and it is lighter than PVC .
Bentonite	Clay predominantly made up of the mineral sodium montmorillonite, a hydrated aluminium silicate. It may include other additives to meet certain requirements. At completion, bentonite can generally be placed on top of the gravel pack, and when hydrated forms an impermeable seal. It is recommended for use in low saline water. Other terms often used are bentonite grout or bentonite slurry.
Cement	A powder that sets hard after being mixed with water. It may include other additives, e.g. sand, to meet certain requirements. It is used for constructing the block pad, which protects the borehole or construction, and also to seal the bore annulus. Cement or cement-bentonite mix slurry is recommended for intermediate and deep bore annulus sealing. Other terms often used are cement grout and cement slurry.
Cement - Bentonite	Material made from powdered bentonite, cement and water. It may include other additives, e.g. sand, to meet certain requirements. Other terms often used are cement-bentonite grout or cement-bentonite slurry.
Collapsed formation	The surrounding sediment or formation is collapsed to fill the space. Material has not been removed from the drill hole and exposed to the surface environment.
Concrete	Material made by mixing cement with sand and crushed stone or gravel and water. It is mainly used to form the concrete block at the surface on completion of a bore.
Drill cuttings	Material produced from the action of the drill bit on the formation. Material has been removed from the drill hole and exposed to the surface environment then reinserted into the hole or annular space.
FRP (Fibreglass reinforced plastic)	Fibreglass casing can be constructed from various types of fibre-reinforced plastic materials. This type of casing is resistant to most forms of corrosion. It is non-conductive and has a higher strength-to-weight ratio than steel casing.
Graded sand/gravel	Graded sand or gravel recorded as gravel pack or filter pack without specific details.
Gravel	A loosely compact coarse sediment (usually rock fragments). The size of the grains ranges from 2 mm (very fine gravel) up to 64 mm, and can include river gravel and glacial gravel.
Grit	Sand-like particles mixed with debris and mud.

Grout	Grout is a general term used when the specific material has not been described. Grout is a fluid mixture of cement (neat) and water of a consistency that can be pumped through a pipe and placed as required in an annular space or cavity. Various additives, such as sand, bentonite and hydrated lime may be included in the mixture. Sometimes bentonite and water are used as grout to meet certain requirements. Can sometimes be called cement or cement-bentonite grout or slurry.
None	The void/annulus space has been left open.
Other	Other material type that has been described in a report but has no matching name in WIN. Needs to be described in a comment.
PVC	Polyvinyl chloride (specific class details not provided). PVC pipes are classified according to the type of polymer, the strength of the pipe, chemical resistance and the hydrostatic design stress (in PSI).
PVC - Class 12	PVC - manufacturer specified class (12).
PVC - Class 16	PVC - manufacturer specified class (16).
PVC - Class 18	PVC - manufacturer specified class (18).
PVC - Class 6	PVC - manufacturer specified class (6).
PVC - Class 8.5	PVC - manufacturer specified class (8.5).
PVC - Class 9	PVC - manufacturer specified class (9).
Quartz	Crystalline mineral with the composition SiO ₂ (silica).
Sand	Sedimentary rock or soil in which particles range in size from 1/16 mm to 2 mm (from 0.05 to 2.0 mm - from very fine to coarse sand).
Sand - graded	A washed, well-rounded, siliceous sand of selected grain size and gradation.
Stainless steel	Alloy containing chromium, nickel molybdenum, carbon and iron. Stainless Steel material is used for casing and screens in highly corrosive environments. Stainless Steel screens have high strength and a very good corrosion resistance. The two most common types used for well screens and casings are Type 304 and Type 316.
Stainless steel - 304	Alloy containing chromium, nickel molybdenum, carbon and iron. Stainless steel grade 304 is suitable for most waters, except aggressive high-chloride and highly anaerobic (sulfide) waters.
Stainless steel - 316	Alloy containing chromium, nickel molybdenum, carbon and iron. Stainless steel grade 316 is suitable for groundwaters having a moderate saline content, and it is more suitable than Type 304 for aggressive high-chloride and highly anaerobic (sulfide) waters.
Steel	Alloy combining iron and other elements, the most common of these being carbon. When carbon is used, its content in the steel is between 0.2% and 2.1% by weight, depending on the grade.
Steel - galvanised	Steel is extremely susceptible to corrosion when exposed to air and saline water. Galvanising coats the steel with zinc and protects the element against corrosion; however, these coatings can be easily damaged. Usage: Galvanized pipe or casing is inappropriate for deep wells.
Unknown	Unknown material.
UPVC	UPVC and PVC-U refers to the same pipe. The [PVC] part of it stands for Polyvinyl Chloride. The [U] stands for Un-plasticised (should not be called Un-modified). Rigid PVC pressure pipes do not contain plasticisers and are commonly referred to us as uPVC or PVC-u pipes indicating that they are unplasticised. PVC pipes are now defined by the pressure nominal (PN) rating.
UPVC Class 12	UPVC - manufacturer specified class (12).
UPVC Class 18	UPVC - manufacturer specified class (18).
UPVC Class 6	UPVC - manufacturer specified class (6).
UPVC Class 9	UPVC - manufacturer specified class (9).

Lithology

Definition: The gross physical characteristics of rocks or rock formations, including composition, grain size, texture, degree of cementation (or lithification) and structures determining rock type.

Reference Name	Description
(none)	(none)
actionalite	actionalite
agglomerate	agglomerate
aggregate	aggregate

alluvium	alluvium
amphiboles	amphiboles
amphibolite	amphibolite
andesite	andesite
anorthosite	anorthosite
anthropogenic material	Material made by humans or resulting from human activities, as opposed to naturally-occurring materials.
apatite	apatite
aplite	aplite
arenite	arenite
arkose (ic)	arkose (ic)
asbestos	asbestos
ash	ash
asphalt	asphalt
banded iron fm	banded iron fm
basalt	basalt
basic rock	basic rock
bauxite	bauxite
bedrock	bedrock
biotite	biotite
bitumen	bitumen
black	black
black mud	black mud
black sand	black sand
blue	blue
boulders	boulders
breccia	breccia
brown	brown
burrow	burrow
calcareenite	calcareenite
calcareous	calcareous
calcilutite	calcilutite
calcite	calcite
calcrete	calcrete
cap rock	cap rock
carbonaceous	carbonaceous
carbonate	carbonate
cavernous	cavernous
cavity	cavity
cement	cement
cemented	cemented
chalcedonic	chalcedonic
chalcedony	chalcedony
chalk	chalk
chert	chert
chlorite (ic)	chlorite (ic)

clay	clay
clayey	clayey
clayey sand	clayey sand
clayey silt	clayey silt
claystone	claystone
coal	coal
coarse	coarse
coarse river wash	coarse river wash
coarse sand	coarse sand
cobbles	cobbles
coffee rock	coffee rock
colluvium	colluvium
concrete	concrete
conglomerate	conglomerate
coral	coral
dacite(ic)	dacite(ic)
dark	dark
debris	debris
diorite	diorite
dolerite	dolerite
dolerite dyke	dolerite dyke
doleritic	doleritic
dolomite	dolomite
dunite	dunite
dyke	dyke
eluvium	eluvium
epidote	epidote
feldspar	feldspar
felsic extrusive rock	felsic extrusive rock
felsic intrusive rock	felsic intrusive rock
felsic volcanic rock	felsic volcanic rock
ferricrete	ferricrete
ferruginous	ferruginous
fill	fill
fine sand	fine sand
foliated	foliated
formation	formation
fossiliferous	fossiliferous
fractured	fractured
fractured rock	fractured rock
fragments	fragments
gabbro	gabbro
garnet	garnet
glauconite	glauconite
gneiss	gneiss
goethite	goethite

gossan	gossan
grainstone	grainstone
granite	granite
granite gneiss	granite gneiss
granitic material	granitic material
granitic rock	granitic rock
granodiorite	granodiorite
granulite	granulite
graphite (ic)	graphite (ic)
gravel	gravel
gravelly	gravelly
green	green
greenstone	greenstone
grey	grey
greywacke	greywacke
grit	grit
gritty	gritty
gypsum	gypsum
haematite	haematite
hardpan	hardpan
heavy minerals	heavy minerals
humic material	humic material
hydrocarbon odour	hydrocarbon odour
ilmenite	ilmenite
indurated material	indurated material
iron staining	iron staining
ironstone	ironstone
ironstone gravel	ironstone gravel
jasper	jasper
jaspilite	jaspilite
joints	joints
kaolin	kaolin
kaolinite	kaolinite
Kaolinitic	Kaolinitic
komatiite	komatiite
lamprophyre	lamprophyre
laterite	laterite
lateritic	lateritic
lava	lava
lignite	lignite
lime	lime
lime sand	lime sand
limestone	limestone
limonite	limonite
loam	loam
loamy	loamy

mafic minerals	mafic minerals
mafic rock	mafic rock
mafic rock	mafic rock
mafic volcanic	mafic volcanic
magnesite	magnesite
magnetic	magnetic
magnetite	magnetite
manganese	manganese
marl	marl
metabasalt	metabasalt
metal	metal
metamorphic	metamorphic
metamorphic dolerite	metamorphic dolerite
metaquartzite	metaquartzite
metasediments	metasediments
mica	mica
micaceous	micaceous
micrite	micrite
migmatite	migmatite
millimetres	millimetres
monzodiorite	monzodiorite
monzonite	monzonite
mottled zone	mottled zone
mud	mud
mudstone	mudstone
mylonite	mylonite
nodules	nodules
orange	orange
ore	ore
organic	organic
organic material	organic material
overburden	overburden
packstone	packstone
peat	peat
peaty	peaty
pebbles	pebbles
pegmatite	pegmatite
pelite	pelite
phyllite	phyllite
pink	pink
pisolites	pisolites
porphyritic	porphyritic
porphyry	porphyry
pyrite	pyrite
pyritic	pyritic
pyroxenite	pyroxenite

quartz	quartz
quartz vein	quartz vein
quartzite	quartzite
red	red
rhyolite	rhyolite
riebeckite	riebeckite
roadbase	roadbase
rock	rock
rubble	rubble
salt	salt
salt - sodium chlrde	salt - sodium chlrde
sand	sand
sandstone	sandstone
sandy	sandy
sandy clay	sandy clay
sandy silt	sandy silt
saprolite	saprolite
schist	schist
schistose	schistose
seaweed	seaweed
sedimentary rock	sedimentary rock
sediments	sediments
sericite	sericite
serpentine	serpentine
serpentinite	serpentinite
shale	shale
sheared	sheared
shells	shells
shelly	shelly
silcrete	silcrete
silica	silica
silicate (opaline)	silicate (opaline)
siliceous	siliceous
siliceous iron formation	siliceous iron formation
silicified	silicified
silt, silty	silt, silty
siltstone	siltstone
silty clay	silty clay
silty sand	silty sand
slate	slate
sludge	sludge
soil	soil
sponglite	sponglite
stones	stones
stoney	stoney
sulphides	sulphides

talc	talc
tar	tar
tillite	tillite
tillite shale	tillite shale
tillitic sandstone	tillitic sandstone
travertine	travertine
tremolite	tremolite
tuff	tuff
tuffaceous rock	tuffaceous rock
ultramafic	ultramafic
vermiculite	vermiculite
volcanics	volcanics
vuggy	vuggy
wacke	wacke
wackestone	wackestone
waste sludge	waste sludge
waste, landfill waste	waste, landfill waste
water	water
water injection	water injection
weathered	weathered
weathered basement rock	weathered basement rock
white	white
yellow	yellow

Log reliabilities

Definition: The type of person and organization reporting log events, and by inference, the associated reliability of the log.

Reference Name	Description
Driller	Logged by a driller
Geologist - Consultant/Mining	Logged by a staff member of a consultancy or mining company who is a geologist or hydrogeologist
Geologist - Internal staff	Logged by an internal departmental staff member who is a geologist or hydrogeologist
Geologist - Other Govt Agency	Logged by a staff member of another government agency who is a geologist or hydrogeologist
Geologist - Unknown Org Type	Logged by a staff member of an unknown type of organisation who is a geologist or hydrogeologist
Non geologist - Consultant/Mining	Logged by a staff member of a consultancy or mining company who is not a geologist or hydrogeologist
Non geologist - Internal staff	Logged by an internal departmental staff member who is not a geologist or hydrogeologist
Non geologist - Other Govt Agency	Logged by a staff member of another government agency who is not a geologist or hydrogeologist
Non geologist - Unknown Org Type	Logged by a staff member of an unknown type of organisation who is not a geologist or hydrogeologist
Unknown	Logged by an unknown person or organisation

Project information

Information related to projects (sampling programs), including project types, objectives, purposes, sampling regimes and sites sampled

Project objectives

Definition: The overall goal that a project is trying to attain; the reason for data collection

Reference Name	Description
(none)	(none)
Administer individual water allocations and manage disputes	Administer individual water allocations and manage disputes
Asset Maintenance	Asset Maintenance
Environmental characteristics research	Environmental characteristics research
Environmental quality classification	Environmental quality classification
Establish environmental water requirements	Establish environmental water requirements
Event impact measurement	Event impact measurement
Identify future water supply needs, sources and values	Identify future water supply needs, sources and values
Identify possible contamination	Identify possible contamination
Location of environmental degradation	Location of environmental degradation
Long-term/seasonal trend measurement	Long-term/seasonal trend measurement
Manage and monitor compliance	Manage and monitor compliance
Model Development	Model Development
Monitor and evaluate the impacts of land use activities on water resources	Monitor and evaluate the impacts of land use activities on water resources
Nutrient reduction	Nutrient reduction
Provide flood warnings and forecasts	Provide flood warnings and forecasts
Review and quantify availability of water resources	Review and quantify availability of water resources
Understand catchment and regional water quality	Understand catchment and regional water quality
Unknown	Unknown
Water Quality Monitoring Protocols	Water Quality Monitoring Protocols
Water treatment methods trial	Water treatment methods trial

Project types

Definition: Classification of projects into types according to the general means and purpose of data collection or capture.

Reference Name	Description
(none)	(none)
Data Extraction from Paper Records	Data Extraction from Paper Records
Groundwater contamination investigation	Groundwater contamination investigation
Once off project	Once off project
Research and investigation project	Research and investigation project
Resource Review	Resource Review
Routine monitoring project	Routine monitoring project
Surfacewater Contamination Investigation	Surfacewater Contamination Investigation
Waterway Restoration	Waterway Restoration

Reading information

Information related to readings, including variables, units, original and standard values, analysis methods and quality ratings

Variable types

Definition: A means of classifying variables into groups having similar chemical structure, end use, biological order, physical characteristics and/or measurement technique

Reference Name	Description
(none)	(none)
Benzene toluene ethylbenzene xylene	Benzene toluene ethylbenzene xylene
Dithiocarbamates	Dithiocarbamates
Hormones	Hormones
Hydrocarbon gases	Hydrocarbon gases that occur only in the gas phase at standard temperature and pressure
Inorganic metals	Inorganic metals
Inorganic non-metals	Inorganic non-metals
Isotope Ratios	Isotope Ratios
Micro-organisms	Micro-organisms
Noble gases	Noble gases
Non-OC/OP pest/herbicides	Non-OC and non-OP pesticides and herbicides
Nutrients	Nutrients
Organic metals	Organic metals
Organic non-metals	Organic non-metals
Organics	Organics
Organochlorine pest/herbicides	Organochlorine pesticides and herbicides
Organophosphate pest/herbicides	Organophosphate pesticides and herbicides
Other Aromatic Hydrocarbons	Other Aromatic Hydrocarbons
Phenols	Phenol compounds
Physical	Physical
Plant pigments	Plant pigments
Plasticisers	Plasticisers
Poly-Aromatic Hydrocarbons	Polynuclear Aromatic Hydrocarbons or Polycyclic Aromatic Hydrocarbons
Polychlorinated biphenyls	Polychlorinated biphenyls
Pyridines	Pyridines
Radionuclides	Radioactive element
Rate (factor/coefficient)	Rate (factor or coefficient) that varies according to reading.
Sample qualifier	Sample qualifier
Serotype	Serotype - an antigenic property of a cell or virus identified by serological methods
Surfactant	Surface Acting Agent
Surrogate recovery	Surrogate recovery
Time-Series Meteorological	Time-Series Meteorological variables. WIN-equivalent representations of Hydstra rain / climate variables. Not to be used for WIN data.
Time-Series Water Levels	Time-Series Water Level variables, including derived levels and flow. WIN-equivalent representations of Hydstra water level variables. Not to be used for WIN data.
Time-Series Water Quality	Time-Series Water Quality variables. WIN-equivalent representations of Hydstra water quality variables. Not to be used for WIN data.
Total Petroleum Hydrocarbons	Total Petroleum Hydrocarbons
Unknown	Unknown
Water Level (discrete)	A discrete (non-continuous) measurement of water level

Sample information

Information related to samples, including site, date-time, depth, matrix, collection method, collection instrument and other sampling regime details

Sample collection frequency types

Definition: The general type of frequency with which samples or data are collected.

Reference Name	Description
Continuous / Logger	Continuous / Logger
Event	Event
Irregular	Irregular
Once off	Once off
Regular	Regular
Unknown	Unknown

Sample collection instruments

Definition: The instrument used to physically collect a sample from the environment. Not to be confused with the instrument used to obtain measurements (analysis instrument).

Reference Name	Description
Autosampler (composite)	Composite Autosampler - composite of discrete times
Autosampler (discrete)	Discrete Autosampler - single shot taken
Bailer	Bailer - bore sample extraction carried out with a bailer (scoop or bucket)
Benthic chamber	Benthic chamber
Box trap - 2cm mesh, 470mm x 210mm x 600mm	Box trap - 2cm mesh, 470mm x 210mm x 600mm
Box trap - 3mm mesh, 260mm x 260mm x 460mm	Box trap - 3mm mesh, 260mm x 260mm x 460mm
Container	Container
Corer	Core sample taken within a localised radius of a sampling point
Diffusion cell	A device that collects samples via diffusion
Extendable pole sampler	Extendable pole sampler
Fyke net - 105cm x 75cm opening	Fyke net - 105cm x 75cm opening
Fyke net - 70cm x 55cm opening	Fyke net - 70cm x 55cm opening
Integrating hose/pipe (25mm int diam)	A hose or pipe with a 25mm internal diameter that is used for taking an integrated-over-depth sample
Net	Sampling net
None	None
Pump (Airlift)	Airlift pump - bore sample extraction using high-pressure air to lift the sample
Pump (Centrifugal)	Centrifugal pump - bore sample extraction carried out with a centrifugal (impellor) pump
Pump (Electric)	Electric pump - bore sample extraction carried out with an electric pump (centrifugal or submersible)
Pump (Inertial valve)	Inertial valve pump - bore sample extraction carried out with an inertial valve pump (eg Waterra)
Pump (Jet)	Jet pump - bore sample extraction carried out with a jet pump (combined centrifugal and nozzle-venturi arrangement)
Pump (Low Flow Air)	Low flow air pump. Uses low-pressure air to prevent sample contamination or loss through turbulence
Pump (Low Flow)	Low flow pump - bore sample extraction carried out with a low flow bladder pump.
Pump (Peristaltic)	Peristaltic pump - bore sample extraction carried out with a peristaltic pump (employs wave-like constriction of a flexible tube)
Pump (Submersible)	Submersible pump - bore sample extraction carried out with a submersible pump (combined centrifugal pump and electric motor that can be submerged in water)

Pump (Submersible) with copper tube	Submersible pump - bore sample extraction carried out with a submersible pump (combined centrifugal pump and electric motor that can be submerged in water) into copper tube sampler
Pump (Turbine)	Turbine pump - bore sample extraction carried out with a turbine pump (type of centrifugal pump)
Pump (unspecified)	Pump of an unspecified type
Pump (Wind)	Wind pump - bore sample extraction carried out with a wind(mill) pump (usually a single-action piston pump powered by wind)
Reverse Circulation Air Core	Reverse Circulation Air Core
Sampling Tube	Sampling tube - a thin walled tube that allows the passage of formation sample material and fits inside an outer drive tube. For bore sediment sample extraction.
Scraping	Scraping of substance from a substrate
Screened auger	Screened auger - a screened hollow auger section, generally just behind the bit, that allows the entry and removal of bore formation fluid for sampling at specific depths.
Sediment sampler (Van Veen)	Van Veen grab sampler - A device for collecting sediment samples
Sweep net - 250 micron mesh, D-frame.	Sweep net - 250 micron mesh, D-frame.
Unknown	Unknown method
Vacuum sampler	Vacuum sampler
Weighted bottle	Weighted bottle - a 2L bottle lowered slowly through the water column to collect an integrated sample

Sample collection methods

Definition: The means by which the sample matrix was captured or collected from the environment in order to be measured. It is not the instrument used to collect the sample, but rather the type of methodology employed.

Reference Name	Description
Artesian Flow	Artesian Flow - sample taken from a surface-flowing well or bore
Benthic sample	Benthic samples from water-sediment interface
Bore development	Bore development
Composite depths	Composite sample of discrete depths taken from the same location
Composite localised radius	Composite localised radius
Composite sites	Composite sample of discrete sites
Composite sites intd over depth	Composite sample of discrete sites each integrated over depth
Composite times	Composite sample of discrete times
Cutting	Cutting - portion of plant cut from main body
Data Logger	Data Logger
Grab phyto	Grab sample for phytoplankton analysis. Means of identifying and securing phytoplankton data.
Grab sample	Grab - discrete sample taken at a singular place, depth and time.
Inert gas lift	Inert gas lift
Injection test Bore	Injection test Bore
Insitu	Insitu reading or observation
Integrated over depth	Integrated over depth
Integrated phyto	Integrated over depth for phytoplankton analysis. Means of identifying and securing phytoplankton data.
Laboratory sample	Laboratory sample
Over-time	Over time - a sample that is taken within or over a specified period of time. Period start is defined by a variable and end is defined by the sample collection date.
Pumped	Pumped
Pumping test	Pumping (test) - constant-rate or step-drawdown pumping test to determine the hydrogeological character of an aquifer
Purge	Purge
Reverse Circulation Air Core	Reverse Circulation Air Core

Splitspoon sample	Splitspoon sample - a longitudinally split sampling tube that is "split" apart on retrieval to access the bore formation sample obtained.
Unknown method	Unknown method

Sample matrices (sample media)

Definition: The physical medium being sampled or measured

Reference Name	Description
(none)	(none)
Air	Air
Animal tissues analysed for constituents	Animal tissues analysed for constituents
Leachate	Leachate
Macroinvertebrate tissue (aquatic insects, crustaceans, molluscs and worms) analysed for constituents	Macroinvertebrate tissue (aquatic insects, crustaceans, molluscs and worms) analysed for constituents
Periphyton (attached algae) analysed for constituents	Periphyton (attached algae) analysed for constituents
Plant tissues analysed for constituents	Plant tissues analysed for constituents
Pore water	Pore water - the water filling the spaces between grains of sediment
Regolith - weathered or transported material overlying more coherent bedrock	Regolith - weathered or transported material overlying more coherent bedrock
Sediment sample	Sediment sample
Sludge sample	Sludge sample
Soil sample	Soil sample
Water sample	Water sample

Sample types

Definition: A categorization of types of sample, broadly based on Standard (i.e. actual measurement) and QA/QC samples, and further divided into individual subtypes where appropriate.

Reference Name	Description
Bottom sample	Bottom sample
Container blank - QA	Container blank - QA
Field blank - QA	Field blank - QA
Field duplicate - QA	Field duplicate - QA
Field duplicate spiked - QA	Field duplicate spiked - QA
Laboratory blank - QA	Laboratory blank - QA
Laboratory duplicate - QA	Laboratory duplicate - QA
Level only - STAND	Level only - STAND
Pollution - STAND	Pollution - STAND
Profile	Profile
Recovery obtained from addition of a known concentration of spike to sample - QA	Recovery obtained from addition of a known concentration of spike to sample - QA
Replicate sample - QA	Replicate sample - QA
Rinsate blank sample obtained from rinsing collection equipment - QA	Rinsate blank sample obtained from rinsing collection equipment - QA
Solution from a laboratory - QA	Solution from a laboratory - QA
Source solution blank - QA	Source solution blank - QA
Standard	Standard
Surface sample	Surface sample

Site information

Information related to sites or locations, including identifiers, site classifications, geo-locational information, datums, purpose and status

Geographic coordinate assessment methods

Definition: The method used to determine site coordinates. The accuracy (Geographic Precision) of the coordinates can be assumed from the assessment method if not provided with the data.

Reference Name	Description
Estimate (from adjacent site)	Estimated from close nearby site that has reliable coordinates (usually obtained by surveying).
Estimate (from map)	Coordinates estimated from a hard copy map.
GDA94 Conversion (Accuracy of 0.05 - 0.9m)	Coordinates converted to GDA94 from AGD84 and older datums in December 2000 as part of departmental adoption of the Geodetic Datum of Australia 1994.
Geographic Information System	GIS (Geographic Information System) used to obtain coordinates.
GPS	GPS (Global Positioning System) used to obtain site coordinates.
GPS - Differential	DGPS (Differential Global Positioning System) used to obtain site coordinates. Improved locational accuracy from GPS.
Real Time Kinematic (RTK) satellite navigation	Real Time Kinematic (RTK) satellite navigation used to obtain site coordinates
Scaled/digitised	Scaled or digitised from various scale hard copy maps containing manually plotted sites. Method is obsolete.
Surveyed	Surveying (non-GPS) used to obtain coordinates.
Unknown	Unknown method

Geographic datum codes

Definition: A code that identifies the origin and orientation of a particular geographic coordinate system.

Reference Name	Description
Australian Geodetic Datum 1966	The Australian Geodetic Datum, proclaimed in 1966. The grid coordinates derived from a Universal Transverse Mercator projection of the AGD66 coordinates, using the Australian National Spheroid, is known as the Australian Map Grid 1966 coordinate set (AMG66).
Australian Geodetic Datum 1984	The coordinate set resulting from an adjustment of the Geodetic Model of Australia 1982 (GMA82) and known as the Australian Geodetic Datum 1984 (AGD84). The equivalent Universal Transverse Mercator grid coordinates, projected using the Australian National Spheroid, are known as the Australian Map Grid 1984 (AMG84).
Clarke 1858	One of three rotational ellipsoids calculated by Clarke in 1858.
Clarke 1880	A rotational ellipsoid calculated by Clarke in 1880.
Geodetic Datum of Australia 1994 (~ WGS84)	The Geocentric Datum of Australia 1994 (GDA94). Equivalent to MGA94 (Metric Grid of Australia 1994) and WGS84 (World Geodetic System 1984).
Unknown	Unknown geocentric datum

Geographic features

Definition: The geographic feature in which a site resides; e.g. catchment; dam; lake; sump; etc

Reference Name	Description
Atmosphere	The mixture of gases, particulate matter and vapours surrounding the earth's surface.
Catchment	The land area drained by a river or body of water, defined by a catchment divide or other topographic or geographic feature.
Cave	A naturally hollowed-out void or series of connecting voids in the ground or in rock
Dam	A barrier that is built across a river or stream to regulate the flow of water, especially in order to create a reservoir
Drain	A constructed pipe or channel that conveys water
Estuary	The lower course of a river where the tide flows in, causing fresh and salt water to mix
Ground	The material beneath the earth's surface
Lake	A geographic area that can or does hold water at the surface.
Ocean	The ocean not including estuaries
Other	Any other geographic or topological feature

River/Stream	A natural watercourse
Soak	Excavation of the ground where groundwater pools but does not flow
Spring	A naturally occurring surface discharge of groundwater that flows from the source
Unknown	The geographic feature has not been defined or is unknown.

Precision of geographic coordinates

Definition: Defines the degree of confidence in the accuracy of the coordinates. It is usually influenced by, and related to, the method used to obtain the coordinates.

Reference Name	Description
+/-1000m	+/- 1000m (Accuracy is between 0 and 1000m)
+/-100m	+/- 100m (Accuracy is between 0 and 100m)
+/-10m	+/- 10m (Accuracy is between 0 and 10m)
+/-1m	+/- 1m (Accuracy is between 0 and 1m)
+/-200m	+/- 200m (Accuracy is between 0 and 200m)
+/-5000m	+/- 5000m (Accuracy is between 0 and 5000m)
+/-500m	+/- 500m (Accuracy is between 0 and 500m)
+/-50m	+/- 50m (Accuracy is between 0 and 50m)
+/-5m	+/- 5m (Accuracy is between 0 and 5m)
Unknown	Unknown accuracy

Reference points used for taking depth measurements

Definition: A point in a vertical plane from which measurements may be taken.

Reference Name	Description
(none)	(none)
Air line	Air line
Cease to flow	Cease to flow
Cease to flow permanent mark	Cease to flow permanent mark
Float well permanent mark	Float well permanent mark
Ground level	Ground level
Inlet	Inlet
Measurement Point	Point from which all depth measurements are taken
Permanent mark	Permanent mark
Pump Sampler Inlet	Pump Sampler Inlet
Reference mark	Reference mark
Sediment Surface Level	Sediment Surface Level
Temporary mark	Temporary mark
Top of casing	Top of casing
Top of cement/concrete block or pad	Top of cement/concrete block or pad
Top of collar	Top of collar
Top of inner casing	Top of inner casing
Top of protective headworks	Top of protective headworks
Top of valve	Top of valve
Unknown	The reference point is not known
Water surface level	Water surface level

Site numbering systems

Definition: A defined system of site numbering that is used to create site references having a particular structure or format and usually encoded with human-readable information. Numbering systems are essential for tracking how the same site is identified by different data collectors over time.

Reference Name	Description
Admin reference	Reference reserved for internal administration purposes
AQWABase	Historical site numbering system used by the AQWABase groundwater database, and based on 1:250,000 map sheets. No longer used.
AWRC	Site numbering system developed by the Australian water Resources Council in 1968 and based upon numbered Drainage Divisions and River Basins around Australia. The first digit signifies the Drainage Division; the second and third signify the River Basin, and the remaining digits signify the site.
Bureau of Meteorology	Site numbering system used by the Bureau of Meteorology and based on rainfall districts. The first three digits signify the district and the remaining digits signify the site.
Country Bacteriological	Historical site numbering system, no longer used.
Dam Safety Instrument	Historical site numbering system, no longer used.
Free text 2	Non-specific text site numbering system. A site may have multiple free text identifiers. This was the second identifier used for the site.
Free text 3	Non-specific text site numbering system. A site may have multiple free text identifiers. This was the third identifier used for the site.
Free text 4	Non-specific text site numbering system. A site may have multiple free text identifiers. This was the fourth identifier used for the site.
Free text 5	Non-specific text site numbering system. A site may have multiple free text identifiers. This was the fifth identifier used for the site.
Free text historical (obsolete)	Historical free text site numbering systems, no longer used.
GROWLS	Historical site numbering system, no longer used.
Meteorological	Site numbering system used by the Department and based on rainfall districts. The first digit is by default a 5 and signifies Department sites rather than BOM sites. The second and third digits indicate the rainfall district, and the remaining digits signify the site. Note: there are twelve sites that are an exception to this rule.
Metro Area Reticulation	Historical site numbering system, no longer used.
Metropolitan Water Board	Historical site numbering system, no longer used.
Mundaring / Kalgoorlie Reticulation	Historical site numbering system, no longer used.
National Land and Water Resource Audit	Historical site numbering system, no longer used.
Pollution Control	Historical site numbering system, no longer used.
Referrable Dam	Historical site numbering system, no longer used.
Water Corporation Functional Location reference	Water Corporation Functional Location reference from SAP Functional Location and Equipment register
Water Production Monitoring	Historical site numbering system, no longer used.
WRC (Text Abbreviated)	Non-specific text site numbering system, originally implemented by the Water and Rivers Commission and known as WRC1. This was the first free text identifier used for the site.

Site purposes

Definition: General grouping of sites for a variety of reasons related to usage of site. A site can have multiple purposes at any one time.

Reference Name	Description
(none)	(none)
Aquaculture	Aquaculture
Dewatering	Dewatering
Domestic/Household	Domestic/Household
Dust suppression	Dust suppression
Exploration	Exploration
Forestry	Forestry
Garden Irrigation	Garden Irrigation

Groundwater Assessment Network	Groundwater Assessment Network
Horticulture	Horticulture
Industry	Industry
Investigation	Investigation
Irrigation	Irrigation
Livestock	Livestock
Mining	Mining
Ministerial Criteria	Ministerial Criteria
Monitoring	Monitoring
Observation	Observation
Orchard	Orchard
Pasture	Pasture
Production	Production
Project bore	Project bore
Rainfall non-standard	Site with a non-standard pluviometer installation
Recharge Estimation	Recharge Estimation
Recreation	Recreation
Reference Network	Reference Network
Saltwater Interface/Intrusion Monitoring	Saltwater Interface/Intrusion Monitoring
Telemetry	Telemetry
Test pumping	Test pumping
Town water supply	Town water supply
Transport	Transport
Unknown	Unknown
Vegetables	Vegetables
Viticulture	Viticulture
Waste disposal	Waste disposal
WRL linked	WRL linked

Site spatial types

Definition: A general class of geometric shape that is applied to sampling sites or to the overall extent of sampling. May also indicate the pattern of sampling.

Reference Name	Description
Area	A two-dimensional polygon that represents the location and extent of study
Grid	A network of evenly spaced intersecting lines that divide an area into regular shapes, which may be sampled systematically or randomly
Line or transect	A straight or curved line or transect along which sampling occurs at defined intervals
Point	A single point at which sampling occurs
Quadrat	A sampling region that is defined by a square or rectangular boundary

Site statuses

Definition: The condition or status of the fixed infrastructure of a department-owned site over time. Does not indicate if data is being collected at the site; just whether the fixed infrastructure is capable of supporting measurements.

Reference Name	Description
Abandoned	Abandoned: key construction elements remain; site has not been rehabilitated; no further maintenance or usage/measurement planned.
Decommissioned	Decommissioned: existing fixed infrastructure has been removed as far as feasible and the site has been rehabilitated.

Destroyed permanently	Destroyed permanently: existing fixed infrastructure at the site has been permanently destroyed beyond repair by a known cause and there is no intention or possibility of repairing it at a later date, e.g. infrastructure destroyed by natural disaster, land development, etc.
Hibernation	Hibernation: the fixed infrastructure at the site is being maintained for possible future use.
Non-Functional	Non-Functional: the fixed infrastructure at the site is in disrepair such that valid measurements cannot be taken at this time. The site is intended to be repaired at a later date, e.g. bore blocked, site vandalized.
Not applicable	Not applicable: no fixed infrastructure exists at the site
Not operating (historical)	Not operating (historical): code defunct and not to be used
Operational	Operational: the fixed infrastructure at the site is being maintained and supports valid measurements
Proposed	Proposed: there is a proposal to install fixed infrastructure at this site sometime in the future.
Unknown	Unknown: the condition of the fixed infrastructure at the site is unknown. This is the default for all non-DOW sites unless specifically known.

Site subtypes

Definition: Narrow categorization of the site type, based on the type of asset or infrastructure at the site or its primary usage.

Reference Name	Description
Bore or Well	Ground site which contains construction elements
Meter off take from a bore	Specific sub type for a meter, where a single WIN site has an additional meter/s installed to monitor water abstraction.
Multi-port bore	A borehole that contains more than one port for different aquifers or aquifer zones
Open hole	Drilled bore or void that does not contain any construction elements
Rainfall/Climate	Any Meteorological site measuring climatic parameters including rainfall
Sampling location	Any location where data is collected and none of the other subtypes apply, e.g. cave, lake, etc
Stream Gauging	Surface sites where open water surface levels, velocity or flow are measured continually. Includes surface storages with natural catchments, natural and artificial channels, and open water bodies
Trench	A deep furrow or narrow ditch with vertical walls and closed ends, cut into the surface of the earth
Unknown	Unknown subtype
Waste water - Sampling Point	Historical sites from Water Authority Waste Water Treatment Plants. No longer used.
Water Supply - Sampling Point	Historical sites from the Water Authority Water Supply Pipelines. No longer used.

Site types

Definition: Broad categorization of the site in relation to the surface of the earth and the primary type of water system (source) it relates to.

Reference Name	Description
Ground	Any ground site at or below the earth's surface and that relates primarily to ground water systems.
Meteorological	Any site at above the earth's surface and where the general focus is on climate or the atmosphere
Surface	Any site at the earth's surface and that relates primarily to surface water systems.
Unknown	Unknown where the site sits in relation to the earth's surface and the primary water system focus

Standard height or level datums

Definition: An elevation datum is a set of reference points on the surface of the earth against which vertical measurements are made or referenced.

Reference Name	Description
Above Sea Level	Above Sea Level
Australian Height Datum	Australian Height Datum
Ground Level	Ground Level

Local Height Datum	Local Height Datum
Mean Sea Level	Mean Sea Level
Not Applicable	Not Applicable
Standard Level Elevation	Standard Level Elevation
Unknown	Unknown

Accuracy of recorded date (to known time interval)

Definition: The unit of measurement to which a given date or time is known to be accurately recorded.

Reference Name	Description
Known day	The associated Date-Time field is known to be accurate to the nearest Day
Known hour	The associated Date-Time field is known to be accurate to the nearest Hour
Known minute	The associated Date-Time field is known to be accurate to the nearest Minute
Known month	The associated Date-Time field is known to be accurate to the nearest Month
Known second	The associated Date-Time field is known to be accurate to the nearest Second
Known year	The associated Date-Time field is known to be accurate to the nearest Year
Unknown	The associated Date-Time field has an unknown accuracy. The accuracy could be as broad as the nearest Century.

Measurement methods

Definition: The method used to obtain vertical measurements for specific site elements.

Reference Name	Description
(none)	(none)
Aneroid barometer	Aneroid barometer used to obtain vertical measurements relative to a datum by measuring atmospheric pressure
Derived from Construction length or reference	Bore construction elements of known length that are used to obtain vertical measurements from a reference point to other points of interest within the bore
Digitally modeled elevation (DEM/DTM/LIDAR)	Digital modelling used to obtain elevations (vertical measurements), from a range of techniques that include Digital Terrain Models (DTMs), Digital Surface Models (DSMs), Digital Elevation Models (DEMs) and Light Detection And Ranging (LIDAR)
Estimate (from adjacent site)	Estimate of height from adjacent site
Estimate (from map)	Estimate of height from a hardcopy map
Geographic Information System	Departmental Geographic Information System used to obtain vertical measurements
GPS - Differential (Surveyed)	Surveying by Differential GPS to obtain vertical measurements
GPS (Surveyed)	Surveying by GPS to obtain vertical measurements
Real Time Kinematic (RTK) satellite navigation	Real Time Kinematic (RTK) satellite navigation used to obtain vertical measurements
Surveyed	Surveying (traditional non-GPS) used to obtain vertical measurements
Tape measure	Tape measure used to obtain vertical measurements
Unknown	Unknown measurement method

Definition:

Description

Definition:

Short Description	Long Description
\$	dollars
%	percent
%w/v	percent weight by volume
%w/w	percent weight for weight
+/- 1 SD	+/- one standard deviation
A	amperes
A.h	ampere hours
A/m	amperes per metre
ac	acres
ac.ft	acre feet
ac.in	acre inches
AMG	Australian Map Grid
angstrom	angstroms
APHA	measurement
atm	atmospheres
atom/L	atoms per litre
AU	astronomical units
b	barns
bar	bars
Bq	becquerels
Bq/L	becquerels per litre
Btu	British thermal unit
C	coulombs
cal	calories
cal/cm ² /d	calories per square cm per day
ccSTP/g	cm ³ gas at std temp & press /g
cd	candela
cd/m ²	candela per square metre
cell/cm ²	cells per square centimetre
cells	total cells
cells/dL	cells per decilitre (100mL)
cells/mL	cells per millilitre
CFU/dL	colony forming units per 100mL
CFU/mL	colony forming units per mL
ch	chains
Ci	Curie
cm	centimetres
cm.km	centimetre kilometres
cm/h	centimetres per hour
cm/s	centimetres per second
cm/s ²	centimetres per second squared

cm-1	per centimetre
cm2	square centimetres
cm3	cubic centimetres
comment	comment
cSt	centistokes
ct	counts
ct/100mL	count per 100 millilitres
ct/area	count per area
ct/min	count per minute
ct/mL	count per millilitre
ct/s	count per second
CU	colour units
date	date
day	day
ddmmyy	day month 2 digit year
ddmmyyyy	day month 4 digit year
deg	degrees
deg C	degrees Celsius
deg F	degrees Fahrenheit
dils	dilutions
dioptre	dioptre
dyne/cm	dyne per centimetre
e/L	equivalents per litre
error	error
eV	electron volts
F	farads
FAU	formazin attenuated units
fib/L	fibres per litre
fm	fathoms
fmol/L	femtomol per litre
FNU	Formazine nephelometric units
ft	feet
ft.lb	foot pounds
ft/s	feet per second
ft/s2	feet per second squared
ft2	square feet
ft3	cubic feet
ft3/s	cubic feet per second
FTU	formazin turbidity units
g	grams
g/100g	grams per 100 grams
g/24h	grams per 24 hours
g/kg	grams per kilogram
g/L	grams per litre

g/m3	grams per cubic metre
g/mL	grams per millilitre
g/sec	grams per second
g440/m	Gilvin-440 per metre
gal	gallons
gal/day	gallons per day
gal/hr	gallons per hour
gal/min	gallons per minute
GL	gigalitres
GL/day	gigalitres per day
gn	gravity
gr/gal	grains per gallon
gr/galCl	grains per gallon as Cl
gr/gNaCl	grains per gal as NaCl
grade	grade
Gy	gray
h	hours
H	henries
ha	hectares
ha.m	hectare metres
hh:mm	hours colon minutes
hhmm	hours no colon minutes
hp	horsepower
hPa	hectopascals
Hu	Hazen units
Hz	hertz
in	inches
in.mile	inch miles
in/hr	inches per hour
in/sec	inch per second
in/sec2	inches per second squared
in2	square inches
in3	cubic inches
J	joules
J/m2	joules per square metre
JTU	Jackson turbidity units
K	kelvin
kcal	kilocalories
kcal/cm2	kilocalories per square cm
kg	kilograms
kg/d/km2	kilograms per day per km2
kg/day	kilograms per day
kg/ha	kilograms per hectare
kg/kg	kilograms per kilogram

kg/L	kilograms per litre
kg/m	kilograms per metre
kg/m ²	kilograms per square metre
kg/m ³	kilograms per cubic metre
kg/min	kilograms per minute
kg/sec	kilograms per second
kg/t	kilograms per tonne
kg/yr	kilograms per year
kJ	kilojoules
kJ/m ²	kilojoules per square metre
kJ/m ³ /h	kilojoules per m ³ per hour
kL	kilolitres
kL/day	kilolitres per day
kL/hr	kilolitres per hour
km	kilometres
km/day	kilometres per day
km/h/sec	kilometres per hour second
km/hr	kilometres per hour
km ²	square kilometres
kn	knots
kohms	kilohms
kPa	kilopascals
kW	kilowatts
kW.hr	kilowatt hours
L	litres
L/hr	litres per hour
L/L-AGD	Latitude/Longitude - AGD66/84
L/L-GDA	Latitude/Longitude - GDA94
L/min	litres per minute
L/s/ha.h	litres per second hectare hour
L/s/ha.m	litres per second hectare min
L/sec	litres per second
L/sec/ha	litres per second per hectare
lb	pounds
lbf	pound-force
lm	lumens
lx	lux
m	metres
m head	metres head
m/area	meters per area
m/day	metres per day
m/hr	metres per hour
m/m	metres per metre
m/sec	metres per second

m/sec ²	metres per second squared
m ²	square metres
m ² /m ²	square metre per square metre
m ² /sec	square metres per second
m ³	cubic metres
m ³ thou	thousands of cubic metres
m ³ /day	cubic metres per day
m ³ /h	cubic metres per hour
m ³ /kg	cubic metres per kilogram
m ³ /s	cubic metres per second
m ³ /sec ²	cubic metres per second sq
mA	milliAmps
mbar	millibars
MBq/L	millibecquerels per litre
meq/100g	milliequivalents per 100 grams
meq/L	milliequivalents per litre
mg	milligrams
mg/g	milligram per gram
mg/kg	milligrams per kilogram
mg/L	milligrams per litre
mg/INaCl	milligrams per litre as NaCl
mg/m ²	milligrams per square metre
mg/m ³	milligrams per cubic metre
mg/sec	milligrams per second
MGA94	Map Grid of Australia 1994
mgal/d	million gallons per day
mi	miles
mi/hr	miles per hour
mi ²	square miles
micron	microns
mil m ³	million cubic metres
min	minutes
mina	minutes (angle)
MJ	megajoules
MJ/m ²	megajoules per square metre
ML	megalitres
mL	millilitres
ML/d/km ²	megalitres per day per km ²
ML/day	megalitres per day
mL/g	millilitres per gram
mL/L	millilitres per litre
mL/sec	millilitres per second
mm	millimetres
mm.km	millimetre kilometres

mm/day	millimetres per day
mm/hr	millimetres per hour
mm/m	millimetre per metre
mm/sec	millimetres per second
mm ²	square millimetres
mmHg	millimetres Mercury
mmol	millimoles
mmol/kg	millimoles per kilogram
Mohms	megaohms
mol	moles
mol H ⁺ /t	moles H ⁺ per tonne
mol/kg	moles per kilogram
mol/L	moles per litre (molarity)
mol/m ³	moles per cubic metre
mPa	millipascals
MPa	megapascals
mPa.sec	millipascal seconds
MPN/dL	Most Probable Number per 100mL
MPN/g	Most Probable Number per gram
mrad	milliradians
mS	millisiemens
mS/cm	millisiemens per centimetre
mS/m	millisiemens per metre
msec	milliseconds
mV	millivolts
N	newtons
n mile	nautical miles
ng/g	nanogram per gram
ng/L	nanograms per litre
no units	No units
NTU	nephelometric turbidity units
Num code	Number that signifies a code
o/oo	per mil
o/oo CDT	ppt deviation from CDT
o/oo PDB	ppt deviation from PDB
o/ooSMOW	ppt deviation from SMOW
o/ooVPDB	ppt deviation from VPDB
o/ooVSMO	ppt deviation from VSMOW
ohm.m	ohms per metre
ohms	ohms
okta	okta
oz	ounces
Pa	pascals
PA.sec	pascal seconds

pCi	picoCuries
pCi/L	picocuries per litre
per day	per day
per hr	per hour
per m	per metre
per min	per minute
per sec	per second
pg/g	picograms per gram
pg/kg	picograms per kilogram
plant/ha	plants per hectare
pMC	percent Modern Carbon
pmol/kg	picomoles per kilogram
point	points
ppb	part per billion
ppm	part per million
ppt	part per thousand
psi	pound per square inch
qt	quarts
quadrant	quadrants
r	revolutions
r/day	revolutions per day
r/hr	revolutions per hour
r/min	revolutions per minute
r/sec	revolutions per second
rad	radians
Ratio	Ratio
RF%	Relative frequency
rod	rods
S	siemens
S/cm	Siemens per centimetre
S/m	siemens per metre
scalar	scalar
sec	seconds
seca	second (angle)
sr	steradian
Sv	sievert
T	tesla
t	tonnes
t/day	tonnes per day
t/dy/km2	tonnes per day per km2
t/sec	tonnes per second
t/yr	tonnes per year
terraL	terralitres
tex	tex

ton	tons
total	Total
u	unified atomic mass unit
uei/s/m2	microeinsteins / sec / metre ²
ueinst	microeinsteins
ug	micrograms
ug/kg	micrograms per kilogram
ug/L	micrograms per litre
ug/m3	micrograms per cubic metre
uin	microinches
uL	microlitres
um	micrometres
umhos/cm	micromhos per centimetre
units	relative units
unknown	unknown
uohm.cm	microhm centimetre
urad	microradians
uS	microsiemens
US ac	acres (US Survey)
US ac.ft	acre feet (US Survey)
US gal	US gallons
US gpd	US gallon per day
US gpm	US gallon per minute
US mg	US million gallons
US mgpd	US million gallons per day
uS/cm	microsiemens per centimetre
uS/m	microsiemens per metre
V	volts
W	watts
W/h/m2	watts hour per square metre
W/m2	watts per square metre
W/s/m2	watt second per sq. metre
Wb	webers
Wb/m2	Webers per Square metre
yd	yards
yd2	square yards
yd3	cubic yard
years	years
yyyyddd	year day