



# Reference Data Report

Reference data is standardised lookup information that is stored in DWER databases as codes, and provided in WIR reports as decoded names. This report provides full listings of reference code names and their descriptions where available.

## Domain: Site information

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

### Data table: Benchmarks

Domain: Site information

**Definition:** The Benchmark Location table describes the location of fixed points called Benchmarks at a particular station/bore. Each benchmark is numbered with a unique number at that station/bore.

### Code table/group: Datum

Data table: Benchmarks

**Definition:** The datum from which RL measurements are taken. The values of the DATUM field are validated against the DATUM codegroup.

Reference Code name	Code	Description	Datum
Australian Height Datum	AHD		
Ground Level	GL		
Local Height Datum	LHD		
Not Applicable	NA		
Standard Level	SL		
Unknown	NULL	Unknown	

### Code table/group: Depth Measurement Point

Data table: Benchmarks

**Definition:** The type of benchmark (measuring point) for measuring depths from.

Reference Code name	Code	Description	Depth Measurement Point
(none)	()		
Air line	AIR		
Bench mark	BM		
Cease to flow	CTF		
Cease to flow permanent mark	CTFPM		
Float well permanent mark	FWPM		
Ground level	GL		
Inlet	INLET		
Measurement Point	MP		
Peak level indicator	PLI		
Permanent mark	PM		
Pump Sampler Inlet	PSI		
Reference mark	RM		
Sediment Surface Level	SSL		
Staff gauge	SG		
Temporary mark	TM		
Top of casing	TOC		
Top of cement/concrete block or pad	TOB		
Top of collar	TOCOL		
Top of inner casing	TOIC		
Top of protective headworks	TOHW		
Top of valve	TOVAL		
Unknown	NULL		
Water surface level	WSL		

**Code table/group: Grid Datum***Data table: Benchmarks*

**Definition:** Specify the datum used for grid references. If you are using a GPS, the datum is likely to be UTM or, in Australia, MGA2020.

Reference Code name	Code	Description	Grid Datum
Map Grid of Australia 2020	MGA2020		

**Code table/group: Lat/Long Datum***Data table: Benchmarks*

**Definition:** Spatial system used for lat/long. If you use a GPS this is likely to be WGS84, or in Australia, GDA2020.

Reference Code name	Code	Description	Lat/Long Datum
Geodetic Datum of Australia 2020	GDA2020		
Unknown			
World Geodetic System 1984	WGS84		

**Code table/group: Method***Data table: Benchmarks*

**Definition:** A coded value describing how the Elevation value was derived.

Reference Code name	Code	Description	Method
(none)	()		
Aneroid barometer	AB		
Digitally modeled elevation	DME		
Estimate (from adjacent site)	ESTADS		
Estimate (from map)	ESTMAP		
From Construction length/ref	BC		
Geographic Information System	GIS		
GPS - Differential (Surveyed)	GPSD		
GPS (Surveyed)	GPS		
Real Time Kinematic sat nav	RTK		
Surveyed	SV		
Tape measure	TMEAS		
Unknown	NULL		

**Code table/group: Position Accuracy***Data table: Benchmarks*

**Definition:** Accuracy of the location data.

Reference Code name	Code	Description	Position Accuracy
+/-1000m	1000M		
+/-100m	100M		
+/-10m	10M		
+/-1m	1M		
+/-200m	200M		
+/-5000m	5000M		
+/-500m	500M		
+/-50m	50M		
+/-5m	5M		
Unknown	NULL		

**Definition:** The SITE database contains details such as location information for each station, or site. Each site must be registered before data for that site can be imported or entered. In program documentation the words site and station are used interchangeably to denote the place at which measurements are taken or samples collected.

**Code table/group: Basin**

Data table: Site

**Definition:** The name of the AWRC River Basin in which the site resides, if applicable.

**Code table/group: Catchment**

Data table: Site

**Definition:** The DOW Catchment in which the site resides, if applicable.

**Code table/group: Currently monitored**

Data table: Site

**Definition:** Measurements are currently being obtained at the site

**Code table/group: Estuary**

Data table: Site

**Definition:** The estuary in which the site resides, if applicable.

**Code table/group: Grid Datum**

Data table: Site

**Definition:** Specify the datum used for grid references. If you are using a GPS, the datum is likely to be UTM or, in Australia, MGA2020.

Reference Code name	Code	Description	Grid Datum
Map Grid of Australia 2020	MGA2020		

**Code table/group: GW Area**

Data table: Site

**Definition:** The groundwater area in which the site resides, if applicable.

**Code table/group: GW Subarea**

Data table: Site

**Definition:** The groundwater subarea in which the site resides, if applicable.

**Code table/group: Infrastructure status***Data table: Site*

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

Reference Code name	Code	Description	Infrastructure status
Decommissioned	DEC	Decommissioned: existing fixed infrastructure has been removed as far as feasible and the site has been rehabilitated.	
Hibernation	HIB	Hibernation: the fixed infrastructure at the site is not in use, however remains in place for possible future use.	
Non-Functional--Known reqrmnt	NFK	Non-Functional: the fixed infrastructure at the site such that valid measurements cannot be taken at this time e.g. bore blocked, site vandalized. Site has been assessed and ongoing measurement is required.	
Non-Functional--Unkown reqrmnt	NFU	Non-Functional: the fixed infrastructure at the site such that valid measurements cannot be taken at this time e.g. bore blocked, site vandalized. Ongoing measurement requirement unknown.	
Not applicable	NA	Not applicable: no fixed infrastructure exists at the site	
Operational	OPR	Operational: the fixed infrastructure at the site is being maintained and supports valid measurements.	
Proposed	PRP	Proposed: there is a proposal to install fixed infrastructure at this site sometime in the future.	
Unknown	UNK	Unknown: the condition of the fixed infrastructure at the site is unknown.	

**Code table/group: Lat/Long Datum***Data table: Site*

**Definition:** Spatial system used for lat/long. If you use a GPS this is likely to be WGS84, or in Australia, GDA2020.

Reference Code name	Code	Description	Lat/Long Datum
Geodetic Datum of Australia 2020	GDA2020		
Unknown			
World Geodetic System 1984	WGS84		

**Code table/group: Met district***Data table: Site*

**Definition:** The Bureau of Meteorology rainfall district in which the site resides, if applicable.

**Code table/group: Position Accuracy***Data table: Site*

**Definition:** Accuracy of the location data.

Reference Code name	Code	Description	Position Accuracy
+/-1000m	1000M		
+/-100m	100M		
+/-10m	10M		
+/-1m	1M		
+/-200m	200M		
+/-5000m	5000M		
+/-500m	500M		
+/-50m	50M		
+/-5m	5M		
Unknown	NULL		

**Definition:** The departmental (DOW) management region in which the site resides, if applicable.

## Code table/group: Site geofeature

Data table: Site

**Definition:** The dominant geographic feature in which the site is situated.

Reference Code name	Code	Description	Site geofeature
Atmosphere	ATMOS		
Catchment	CATCH		
Cave	CAVE		
Dam	DAM		
Drain	DRN		
Estuary	EST		
Ground	GROUND		
Lake	LAKE		
Ocean	OCEAN		
Other	OTH		
River/Stream	RIVER		
Soak	SOAK		
Spring	SPRIN		
Unknown	NULL		

## Code table/group: Site subtype

Data table: Site

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

Reference Code name	Code	Description	Site subtype
Bore or Well	BOREW	Ground site which contains construction elements.	
Meter off take from a bore	METER	Specific sub type for a meter, where a single WIN site has an additional meter/s installed to monitor water abstraction.	
Multi-port bore	MPORT	A borehole that contains more than one port for different aquifers or aquifer zones	
Open hole	OPENH	Drilled bore or void that does not contain any construction elements	
Production	PROD		
Rain/climate	RAINCLIM	Any Meteorological site measuring climatic parameters including rainfall	
Sampling location	SAMPL	Any location where data is collected and none of the other subtypes apply, e.g. cave, lake, etc	
Stream Gauging	STRMGAUG	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	TRNCH	A deep furrow or narrow ditch with vertical walls and closed ends, cut into the surface of the earth	
Unknown	NULL		
Waste water - Sampling Point	WASTE	Historical sites from Water Authority Waste Water Treatment Plants. No longer used.	
Water Supply - Sampling Point	SUPP	Historical sites from the Water Authority Water Supply Pipelines. No longer used.	

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

Reference Code name	Code	Description	Site Type
Groundwater	GROUND	A site where the primary water source is below ground.	
Rain/climate	RAINCLIM	A site where the primary water source is the atmosphere.	
Stream Gauging	STRMGAUG	A site where the primary water source is at the surface, and open water surface levels, velocity or flow are measured continually.	
Surface (other)	SURFOTH	A site where the primary water source is at the surface, and other than continuous open water surface levels, velocity or flow are measured	

## **Domain: Borehole information**

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

### **Data table: Aquifer**

*Domain: Borehole information*

**Definition:** An aquifer is a layer (strata) of rock which holds water and allows water to percolate through it. The groundwater AQUIFER table contains the aquifer name where the bore inlet (screened) are set.

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### **Code table/group: Aquifer name**

*Data table: Aquifer*

**Definition:** A code referring to a named aquifer.

**Definition:** The groundwater CASING table contains as constructed information for a bore. A number of records may exist for each site in this table - one for each element in the bore.

The bore construction elements table includes:

- Solid or slotted lining of pipe(s), typically steel, stainless steel, PVC or FRP that are used to keep a bore open in unstable sediment/rock. An inlet allows water to flow through the bore.
- Valves, packers, centralizers, end caps, headworks, crossovers, screens etc.

**Code table/group: Element**

Data table: Bore construction elements

**Definition:** The CASING table can hold records that correspond to more than one physical entity - for example Casing, Screen, Open Hole. This fields describes the entity that this entry relates to.

Reference Code name	Code	Description	Element
Casing	CASIG	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	
Centraliser	CENT		
Crossover/Reducer	CROSS	Crossover/Reducer: a fitting used to allow casings or pipes of different diameters to be joined together.	
End cap	ENDCP	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	FLOASH	loat 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	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	HEADW	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	HORSP	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 (screen)	INLET	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).	
Other	OTHER		
Packer	PACKR	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.	



Reference Code name	Code	Description	Element
Plug	PLUG	Plug: an element that prevents leakage (hydraulically isolates) at certain points within a construction element.	
Pump	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	PUMPI	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 would not be placed within the screen, but on rare occasions it may be.	
Standpipe	SPIPE	Standpipe: pipe or tubing that is designed to protect bore casing that protrudes above the ground.	
Sub-surface Pit	SUBSU	PitSub-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	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	SURFBL	Surface block: a block of concrete or cement, which covers the surface surrounding the bore and protects the borehole, aquifer or construction elements.	
Unknown	NULL		
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.	

**Definition:** A code for the type of inlet or screen construction. Eg Perforated, Slotted, Wire-wound etc.

Reference Code name	Code	Description	Inlet/Screen type
Filter sock	FILT SOCK	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).	
Not applicable	NA	Not applicable	
Open	OPENIN	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. (A screened inlet is part of the bore/well construction that allows intake of groundwater into the pipe/casing).	
Other	INOTHR	Other: the inlet type has been described in the report but has no matching element name in HYDSTRA. (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.	
Perforated	INPERF	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	
Screen	INSCRN	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	
Slotted	INSLOT	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).	
Unknown	INUNK	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).	
Wedgewire	INWEWI	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).	
Wire-wound	INWIWO	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).	

**Definition:** The code describes the type of material of the different casing elements, for example, PVC plastic, threaded steel or concrete.

Reference Code name	Code	Description	Material
ABS	ABS	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	BENTO	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	CEMEN	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.	
Collapsed formn	COLAP	ollapsed 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	CONCR	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	DRILC	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	FRP	Firbreglass 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.	
Glass Reinf epoxy	GRE	Glass Reinforced Epoxy	
Gravel	GRAVL	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.	
None	NONE	The void/annulus space has been left open.	
Other	OTHER	Other material type that has been described in a report.	
PVC	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.	
PVC - Class 12	PVC12	PVC - manufacturer specified class (12)	

Reference Code name	Code	Description	Material
PVC - Class 16	PVC16	PVC - manufacturer specified class (16)	
PVC - Class 18	PVC18	PVC - manufacturer specified class (18)	
PVC - Class 6	PVC6	PVC - manufacturer specified class (6)	
PVC - Class 8.5	PVC85	PVC - manufacturer specified class (8.5)	
PVC - Class 9	PVC9	PVC - manufacturer specified class (9)	
Sand	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	SANDG	A washed, well-rounded, siliceous sand of selected grain size and gradation.	
Stainless St 304	SS304	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 St 316	SS316	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.	
Stainless Steel	SS	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.	
Steel	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	STGAL	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	NULL		
UPVC	UPVC	PVC 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	UPV12	UPVC - manufacturer specified class (12).	
UPVC Class 18	UPV18	UPVC - manufacturer specified class (18).	
UPVC Class 6	UPVC6	UPVC - manufacturer specified class (6).	
UPVC Class 9	UPVC9	UPVC - manufacturer specified class (9).	

**Definition:** DRILLING stores information about drilling diameters and fluids at various depths down a groundwater bore.

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**Code table/group: Drilling Fluid**

Data table: Drilling information

**Definition:** A code for the drilling fluid used to drill the hole

Reference Code name	Code	Description	Drilling Fluid
Mud	MD		
NULL	NULL		
Water	WA		

**Definition:** Gravel and fill materials are inserted between the hole and the pipe (casing) at particular depth intervals in the hole. Different types of materials are used in different parts of the bore. Gravel packs are inserted between the hole and the pipe (casing) to a particular depth in the hole and are used to screen out materials from the aquifer that may damage the pump or block the screen etc. Other material types can also be inserted to fill voids in the hole or to stabilise the casing and seal an area to protect aquifers and geological formations.

**Code table/group: Fill type**

Data table: Gravel and fill

**Definition:** The type of fill used

Reference Code name	Code	Description	Fill type
Annular Fill	ANFILL		
Seal	SEAL		
Unknown	NULL		
Void Fill	VOFILL		

**Definition:** The type of material used, for example, water worn, crushed or rounded.

Reference Code name	Code	Description	Material type
Bentonite	BENTO	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	CEMEN	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.	
Cemnt-Bentonite	CEMBE	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 formn	COLAP	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	CONCR	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	DRILC	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.	
Gravel	GRAVL	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	GRIT	Sand-like particles mixed with debris and mud.	
Grout	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	
Other	OTHER	ther material type that has been described in a report.	
Quartz	QUARZ	Crystalline mineral with the composition SiO <sub>2</sub> (silica).	

Reference Code name	Code	Description	Material type
Sand	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/grav-gradd	GSG	Graded sand or gravel used as gravel pack or filter pack material.	
Sand-graded	SANDG	A washed, well-rounded, siliceous sand of selected grain size and gradation.	
Unknown	NULL		

**Data table: Groundwater (bore) development details**

*Domain: Borehole information*

**Definition:** Details of any Developments applied during and/or after bore construction

**Code table/group: Development Method**

*Table: Groundwater (bore) development details*

**Definition:** A code for the method used to apply the development treatment

Reference Code name	Code	Description	Development Method
Adding dispersants + detergents	ADISPDET		
Air lift and jetting	AIRJET		
Airlift	AIRLIFT		
Bailing	BAILING		
Pumping	PUMPING		
See Development Details	OTHER		
Surging	SURGING		



**Definition:** Each record in the GWHOLE table contains information for a groundwater bore.

**Code table/group: Drill method**

Data table: Groundwater hole

**Definition:** This code specifies the drilling method used to drill the hole, for example, rotary drill, cable tool or auger.

Reference Code name	Code	Description	Drill method
Air drill	AIRDRILL		
Auger	AUGER		
Cable tool	CABLTOOL		
Diamond core	DIAMDCOR		
Direct push	DIRTPUSH		
Hollow stm aug	HOLSTMAU		
None	NONE		
Percussion	PERCUSSN		
Revcirc aircor	RCAIRCOR		
Reverse circ	REVCIRC		
Rot air blast	ROTAIRBL		
Rot air drill	ROTRYAIR		
Rot mud drill	ROTRYMUD		
Rot rev circ	ROTRYRCI		
Rotary drill	ROTARY		
Rotary hammer	ROTRYHAM		
Rotary percuss	ROTRYPRC		
See Comment	DESC		
Sludge	SLUDGE		
Sonic coring	SONCCOR		
Unknown	NULL		
Wireline	WIRELINE		

**Code table/group: Drill rig**

Data table: Groundwater hole

**Definition:** This code specifies the rig used to drill the hole

Reference Code name	Code	Description	Drill rig
(none)	()		
Atlas Copco RC	ATCOPRC	Atlas Copco RC	
Fraste FS500 40T pullback	FRAFS500	Fraste FS500 40 tonne pullback drilling rig. Rated depth 1200 m at 311 mm diameter.	
Ruston bucyrus	RUSTONBU		
Schramm T685 rig	SCHT685		
Unknown	NULL		
Versadrill - V2095EXP	VERS2095	Versadrill - V2095EXP	

**Definition:** The groundwater LITHDRIL database holds geological strata information obtained during the construction of the bore. A number of these records may exist for each site - one for each geological strata.

**Code table/group: Role of interpreter**

Data table: Lithology log

**Definition:** The person and organization reporting a lithological log description or interpreted summary, and by inference, the associated reliability of the log or summary

**Definition:** The groundwater LITHSTRA table contains an interpreted summary of the lithological log. The summary log contains information describing the age and/or stratigraphy of the geological strata for a site. There may be more than one record for each site, one for each strata at a specified depth interval.

**Code table/group: Age/Stratigraphic Unit**

Data table: Stratigraphy

**Definition:** A code for the Geological Age and /or Stratigraphic unit interpreted from the lithological data.

Reference Code name	Code	Description	Age/Stratigraphic Unit
(none)	()	(none)	
? Archean	A?	Possible Archean	
? Whitewater Volcanics	PRWV?	Possible Whitewater Volcanics	
? Amphibolite	AMA?	Archean_Possible Amphibolite	
? Anderson Fm	CA?	Possible Anderson Formation	
? Andesite	AA?	Archean_Possible Andesite	
? Antrum Plateau Volcanics	CMAU?	Possible Antrim Plateau Volcanics	
? Ascot Fm	TA?	Possible Ascot Formation	
? Ashburton Fm	PWA?	Possible Ashburton Formation	
? Balfour Fm	MNB?	Possible Balfour Formation	
? Basalt	AB?	Archean_Possible Basalt	
? Bassendean Sand	QD?	Possible Bassendean Sand	
? Becher Sand	QC?	Possible Becher Sand	
? Betty Fm	CPB?	Possible Betty Formation	
? Biscay Fm	AHR?	Archean_Possible Biscay Formation	
? Blina Shl	TRBL?	Possible Blina Shale	
? Boolgeeda Iron Fm	PHO?	Possible Boolgeeda Iron Formation	
? Boongal Fm	FOB?	Possible Boongal Formation	
? Bow River Granite	PBO?	Possible Bow River Granite	
? Brockman Iron Fm	PHB?	Possible Brockman Iron Formation	
? Broome Sandst	KB2?	Possible Broome Sandstone	
? Bunbury Basalt	KB?	Possible Bunbury Basalt	
? Bunjinah Fm	FU?	Possible Bunjinah Formation	
? Cainozoic	CZ?	Possible Cenozoic	
? Cainozoic to Cretaceous	CZK?	Possible Cenozoic to Cretaceous	
? Cainozoic+Proterozoic	CZPR?	Possible Cenozoic and Proterozoic	
? Callawa Fm	JKC?	Possible Callawa Formation	
? Callytharra Fm	PCA?	Possible Callytharra Formation	
? Cambrian	CAM?	Possible Cambrian	
? Carboniferous	C?	Possible Carboniferous	
? Carboniferous to Permian	CPE?	Possible Carboniferous to Permian	
? Cardabia Calcarenite	TCC?	Possible Cardabia Calcarenite	
? Carolyn Fm	CPC?	Possible Carolyn Formation	
? Carson Volcanics	PKC?	Possible Carson Volcanics	
? Cattamarra Coal Measures	JC?	Possible Cattamarra Coal Measures	
? Champion Bay Grp	JM?	Possible Champion Bay Group	
? Champion Bay+Chapman Grps	JMJL?	Possible Champion Bay Group and Chapman	
? Collie Coal Measures	PCM?	Possible Collie Coal Measures	
? Condren Sandst	PCO?	Possible Condren Sandstone	
? Coomberarie Fm	PAC?	Possible Coomberarie Formation	
? Coyrie Fm	PBC?	Possible Coyrie Formation	
? Creek Fm	CBK?	Possible Border Creek Formation	
? Cretaceous	K?	Possible Cretaceous	
? Devonian	D?	Possible Devonian	
? Diorite	AD?	Archean_Possible Diorite	

Reference Code name	Code	Description	Age/Stratigraphic Unit
? Dirk Hartog Fm	SD?	Possible Dirk Hartog Formation	
? Dolerite	ADO?	Archean_Possible Dolerite	
? Dolerite	PRDO?	Possible Proterozoic_Dolerite	
? Duck Creek Fm	WD?	Possible Duck Creek Formation	
? Elvire Fm	PRE?	Possible Elvire Formation	
? Emeriau Sandst	KR?	Possible Emeriau Sandstone	
? Eneabba Fm	JE?	Possible Eneabba Formation	
? Erskine Sandst	TRE?	Possible Erskine Sandstone	
? Fairfield Grp	DCF?	Possible Fairfield Group	
? Flat Rock Fm	PRF?	Possible Flat Rock Formation	
? Frezier Sandst	KF?	Possible Frezier Sandstone	
? Gage Fm	KWG?	Possible Gage Formation	
? Gearle Siltstone	KG?	Possible Gearle Siltstone	
? Gingin Chalk	KCG?	Possible Gingin Chalk	
? Gngangara Sand	QN?	Possible Gngangara Sand	
? Granite	AG?	Archean_Possible Granite	
? Granitoid Gneiss	AGN?	Archean_Possible Granitoid Gneiss	
? Granodiorite	AGG?	Archean_Possible Granodiorite	
? Grant Grp	CPG?	Possible Grant Group	
? Guildford Clay	QG?	Possible Guildford Clay	
? Hardey Fm	FH?	Possible Hardey Formation	
? Hardman Fm	PHA?	Possible Hardman Formation	
? Hart Dolerite	PRHD?	Possible Hart Dolerite	
? Henley Sandst Mbr	KCOH?	Possible Henley Sandstone Member	
? High Cliff Sandst	PG?	Possible High Cliff Sandstone	
? Irwin River Measure	PI?	Possible Irwin River Measure	
? Jarlemai Siltstone	JKR?	Possible Jarlemai Siltstone	
? Jarrad Sandst Mbr	POJ?	Possible Jarrad Sandstone Member	
? Jeerinah Fm	PFJ?	Possible Jeerinah Formation	
? Jurassic	J?	Possible Jurassic	
? Jurassic to Cretaceous	JK?	Possible Jurassic to Cretaceous	
? Kardinya Shl Mbr	KCOK?	Possible Kardinya Shale Member	
? Kellys Knob Sandst Mbr	DUK?	Possible Kellys Knob Sandstone Member	
? Kings Park Fm	TK?	Possible Kings Park Formation	
? Kockatea Shl	TRK?	Possible Kockatea Shale	
? Lamboo Complex	PRL?	Possible Lamboo Complex	
? Lancelin Fm	KCL?	Possible Lancelin Formation	
? Laurel Fm	CLL?	Possible Laurel Formation	
? Lawford Beds	TL?	Possible Lawford Beds	
? Leederville Fm	KWL?	Possible Leederville Formation	
? Lesueur Sandst	TRL?	Possible Lesueur Sandstone	
? Lightjack Fm	PLJ?	Possible Lightjack Formation	
? Liveringa Grp	PL?	Possible Liveringa Group	
? Lyons Fm	CPL?	Possible Lyons Formation	
? Maddina Volcanics	PFM?	Possible Maddina Volcanics	
? Mafic Rock	AM?	Archean_Possible Mafic Rock	
? Mafic Schist	AMS?	Archean_Possible Mafic Schist	
? Mariginiup Mbr	KWLM?	Possible Mariginiup Member	
? Marra Mamba Iron Fm	PM?	Possible Marra Mamba Iron Formation	
? McAlly Shl	PRMA?	Possible McAlly Shale	
? McIntosh Gabro	PRMC?	Possible McIntosh Gabro	
? Meda Fm	JKM?	Possible Meda Formation	
? Mesozoic	M?	Possible Mesozoic	

Reference Code name	Code	Description	Age/Stratigraphic Unit
? Metasedimentary Rock	AS?	Archean_Possible Metasedimentary Rock	
? Migmatite	AGA?	Archean_Possible Migmatite	
? Milligans Beds	CLM?	Possible Milligans Beds	
? Millyit Sandst	TRM?	Possible Millyit Sandstone	
? Mirrabooka Mbr	KCOM?	Possible Mirrabooka Member	
? Molecap Greensand	KCM?	Possible Molecap Greensand	
? Moola Bulla Fm	PRMB?	Possible Moola Bulla Formation	
? Mosquito Creek Fm	AMC?	Archean_Possible Mosquito Creek Formation	
? Mount Mc Rae Shl	PHS?	Possible Mount Mc Rae Shale	
? Mount McGrath Fm	WM?	Possible Mount McGrath Formation	
? Mount Roe Basalt	FR?	Possible Mount Roe Basalt	
? Muderong Shl	KM?	Possible Muderong Shale	
? Mullaloo Sandst Mbr	TKM?	Possible Mullaloo Sandstone Member	
? Munkayarra Fm	TRY?	Possible Munkayarra Formation	
? Nakina Fm	KNA?	Possible Nakina Formation	
? Nanutarra Fm	KNY?	Possible Nanutarra Formation	
? Noonkanbah Fm	PNO?	Possible Noonkanbah Formation	
? Olympio Fm	AHO?	Archean_Possible Olympio Formation	
? Ordovician	O?	Possible Ordovician	
? Osborne Fm	KCO?	Possible Osborne Formation	
? Otorowiri Siltstone Mbr	JKO?	Possible Otorowiri Siltstone Member	
? Palaeozoic	PA?	Possible Palaeozoic	
? Pallinup Siltstone	TPP?	Possible Pallinup Siltstone	
? Parmelia Fm	JKP?	Possible Parmelia Formation	
? Paterson Fm	PAT?	Possible Paterson Formation	
? Permian	PE?	Possible Permian	
? Permian to Jurassic	PEJ?	Possible Permian to Jurassic	
? Pillara Limest	DPL?	Possible Pillara Limestone	
? Pinjar Mbr	KWLP?	Possible Pinjar Member	
? Poison Hill Greensand	KCP?	Possible Poison Hill Greensand	
? Poole Sandst	PP?	Possible Poole Sandstone	
? Precambrian	PRC?	Possible Precambrian	
? Proterozoic	PR?	Possible Proterozoic	
? Quartz+Mica Schist	ALM?	Archean_Possible Quartz-Mica Schist	
? Quaternary	Q?	Possible Quaternary	
? Quaternary+Superficial Fms	QTSF?	Possible Quaternary and Superficial Formations	
? Quaternary+Tertiary	QT?	Possible Quaternary to Tertiary	
? RaggedRangeConglomerate Mbr	DUR?	Possible Ragged Range Conglomerate Member	
? Rockingham Sand	TRO?	Possible Rockingham Sand	
? Roy Hill Shl Mbr	PFJR?	Possible Roy Hill Shale Member	
? South Perth Shl	KWS?	Possible South Perth Shale	
? Stockton Fm	PS?	Possible Stockton Formation	
? Tamala Limest	QTL?	Possible Tamala Limestone	
? Tertiary	T?	Possible Tertiary	
? Throssell Shale	PRTH?	Possible Throssell Shale	
? Toolonga Calcilutite	KT?	Possible Toolonga Calcilutite	
? Triassic	TR?	Possible Triassic	
? Tumblagooda Sandst	ST?	Possible Tumblagooda Sandstone	
? Tunganary Fm	PRT?	Possible Tunganary Formation	
? Turee Creek Fm	PWT?	Possible Turee Creek Formation	
? Ultramafic Rock	AU?	Archean_Possible Ultramafic Rock	
? Wallal Sandst	JLL?	Possible Wallal Sandstone	
? Wanneroo Mbr	KWLW?	Possible Wanneroo Member	

Reference Code name	Code	Description	Age/Stratigraphic Unit
? Weeli Wolli Fm	PHJ?	Possible Weeli Wolli Formation	
? Werillup Fm	TPW?	Possible Werillup Formation	
? Windalia Radiolarite	KW?	Possible Windalia Radiolarite	
? Winifred Fm	CPW?	Possible Winifred Formation	
? Wittenoom Dolomite	PHD?	Possible Wittenoom Dolomite	
? Woodada Fm	TRW?	Possible Woodada Formation	
? Woodward Dolerite	PRWD?	Possible Woodward Dolerite	
? Woongarra Volcanics	PHWV?	Possible Woongarra Volcanics	
? Wthrd Amphibolite	AMAW?	Archean_Possible Weathered Amphibolite	
? Wthrd Andesite	AAW?	Archean_Possible Weathered Andesite	
? Wthrd Banded Iron Fm	ACIW?	Archean_Possible Weathered Banded Iron Formation	
? Wthrd Basalt	ABW?	Archean_Possible Weathered Basalt	
? Wthrd Bedrock	AEW?	Archean_Possible Weathered Bedrock	
? Wthrd Boongal Fm	FOBW?	Possible Weathered Boongal Formation	
? Wthrd Bow River Granite	PBOW?	Possible Weathered Bow River Granite	
? Wthrd Brockman Iron Fm	PHBW?	Possible Weathered Brockman Iron Formation	
? Wthrd Bunjinah Fm	FUW?	Possible Weathered Bunjinah Formation	
? Wthrd Coomberarie Fm	PACW?	Possible Weathered Coomberarie Formation	
? Wthrd Diorite	ADW?	Archean_Possible Weathered Diorite	
? Wthrd Dolerite	ADOW?	Archean_Possible Weathered Dolerite	
? Wthrd Dolerite	PRDOW?	Possible Weathered Proterozoic_Dolerite	
? Wthrd Duck Creek Fm	WDW?	Possible Weathered Duck Creek Formation	
? Wthrd Felsic Volcanics	AFVW?	Archean_Possible Weathered Felsic Volcanics	
? Wthrd Gabbro	AOGW?	Archean_Possible Weathered Gabbro	
? Wthrd Gneiss	ANW?	Archean_Possible Weathered Gneiss	
? Wthrd Granite	AGW?	Archean_Possible Weathered Granite	
? Wthrd Granitoid Gneiss	AGNW?	Archean_Possible Weathered Granitoid Gneiss	
? Wthrd Granitoid Gneiss	AW?	Archean_Possible Weathered Granitoid Gneiss	
? Wthrd Hardey Fm	FHW?	Possible Weathered Hardey Formation	
? Wthrd King Leopold Sandst	PKLW?	Possible Weathered King Leopold Sandstone	
? Wthrd Lyons Fm	CPLW?	Possible Weathered Lyons Formation	
? Wthrd Mafic Intrusive	AOW?	Archean_Possible Weathered Mafic Intrusive	
? Wthrd Mafic Rock	AMW?	Archean_Possible Weathered Mafic Rock	
? Wthrd Mafic Schist	AMSW?	Archean_Possible Weathered Mafic Schist	
? Wthrd Marra Mamba Fm	PMW?	Possible Weathered Marra Mamba Iron Formation	
? Wthrd Metasedimentary Rock	ASW?	Archean_Possible Weathered Metasedimentary Rock	
? Wthrd Migmatite	AGAW?	Archean_Possible Weathered Migmatite	
? Wthrd Mosquito Creek Fm	AMCW?	Archean_Possible Weathered Mosquito Creek Formation	
? Wthrd Mount McGrath Fm	WMW?	Possible Weathered Mount McGrath Formation	
? Wthrd Parmelia Fm	JKPW?	Possible Weathered Parmelia Formation	
? Wthrd Precambrian	PRCW?	Possible Weathered Precambrian	
? Wthrd Proterozoic	PRTW?	Possible Weathered Proterozoic	
? Wthrd Proterozoic Gneiss	PRNW?	Possible Proterozoic_Weathered Gneiss	
? Wthrd Proterozoic Granite	PRGW?	Possible Weathered Proterozoic_Granite	
? Wthrd Schist	AHW?	Archean_Possible Weathered Schist	
? Wthrd Ultramafic Rock	AUW?	Archean_Possible Weathered Ultramafic Rock	
? Wthrd Weeli Wolli Fm	PHJW?	Possible Weathered Weeli Wolli Formation	
? Wthrd Wittenoom Dolomite	PHDW?	Possible Weathered Wittenoom Dolomite	
? Wthrd Yarrowolya Fm	PAYW?	Possible Weathered Yarrowolya Formation	
? Wyndham Shl	PTW?	Possible Wyndham Shale	
? Yarragadee Fm	JY?	Possible Yarragadee Formation	

Reference Code name	Code	Description	Age/Stratigraphic Unit
? Yarraloola Conglomerate	KNY1?	Possible Yarraloola Conglomerate	
? Yarrawolya Fm	PAY?	Possible Yarrawolya Formation	
? Yoganup Fm	TY?	Possible Yoganup Formation	
? Yurabi Fm	PRY?	Possible Yurabi Formation	
Alexander Fm	JA	Alexander Formation	
Alinga Fm	KA	Alinga Formation	
Amphibolite	AMA	Archean_Amphibolite	
Amphibolitic Basalt	AUB	Archean_Amphibolitic Basalt	
Anderson Fm	CA	Anderson Formation	
Andesite	AA	Archean_Andesite	
Antrum Plateau Volcanics	CMAU	Antrim Plateau Volcanics	
Archean	A	Archean	
Ascot Fm	TA	Ascot Formation	
Ashburton Fm	PWA	Ashburton Formation	
Babbagoola Fm	PRBB	Babbagoola Formation	
Balfour Fm	MNB	Balfour Formation	
Banded Iron Fm	ACI	Archean_Banded Iron Formation	
Basal Triassic Sand	TRB	Basal Triassic Sand	
Basalt	AB	Archean_Basalt	
Bassendean Sand	QD	Bassendean Sand	
Bassendean Sand+Guildford Clay	QDG	Bassendean Sand and Guildford Clay	
Becher Sand	QC	Becher Sand	
Bedrock	AE	Archean_Bedrock	
Betty Fm	CPB	Betty Formation	
Birdrong Sandst	KB1	Birdrong Sandstone	
Biscay Fm	AHR	Archean_Biscay Formation	
Blina Shl	TRBL	Blina Shale	
Boolgeeda Iron Fm	PHO	Boolgeeda Iron Formation	
Boonall Dolomite	PRBO	Boonall Dolomite	
Boongal Fm	FOB	Boongal Formation	
Border Creek Fm	CBK	Border Creek Formation	
Bossut Fm	QB	Bossut Formation	
Bow River Granite	PBO	Bow River Granite	
Brockman Iron Fm	PHB	Brockman Iron Formation	
Broome Sandst	KB2	Broome Sandstone	
Bulgadoo Shl	PBB	Bulgadoo Shale	
Bunbury Basalt	KB	Bunbury Basalt	
Bunjinah Fm	FU	Bunjinah Formation	
Burt Range Fm	CLB	Burt Range Formation	
Buttons Beds	DUB	Buttons Beds	
Cadda Fm	JD	Cadda Formation	
Cainozoic	CZ	Cenozoic	
Cainozoic/Proterozoic	CZPR	Cenozoic and Proterozoic	
Cainozoic+Carboniferous	CZC	Cenozoic and Carboniferous	
Cainozoic+Devonian	CZD	Cenozoic and Devonian	
Cainozoic+Permian	CZPE	Cenozoic and Permian	
Callawa Fm	JKC	Callawa Formation	
Callytharra Fm	PCA	Callytharra Formation	
Cambrian	CAM	Cambrian	
Carboniferous	C	Carboniferous	
Carboniferous to Permian	CPE	Carboniferous to Permian	
Cardabia Calcarenite	TCC	Cardabia Calcarenite	
Carnac Mbr	JKPC	Carnac Member	

Reference Code name	Code	Description	Age/Stratigraphic Unit
Carolyn Fm	CPC	Carolyn Formation	
Carr Boyd Grp	PRCB	Carr Boyd Grp	
Carribuddy Fm	SDC	Carribuddy Formation	
Carson Volcanics	PKC	Carson Volcanics	
Carynginia Fm	PC	Carynginia Formation	
Cattamarra Coal Measures	JC	Cattamarra Coal Measures	
Cecil Sandst Mbr	DUE	Cecil Sandstone Member	
Cement Plug	CP		
Champion Bay Grp	JM	Champion Bay Group	
Champion Bay Grp+Chapman Grp	JMJL	Champion Bay Group and Chapman Group	
Chapman Grp	JL	Chapman Group	
Chert	AC	Archean_Chert	
Clanmeyer Siltstone Fm	DC	Clanmeyer Siltstone Formation	
Cockatoo Fm (Grp)	DUC	Cockatoo Formation (Group)	
Cockburn Sandst	PTC	Cockburn Sandstone	
Cockleshell Gully Fm	JO	Cockleshell Gully Formation	
Colalura Sandst	JMC	Colalura Sandstone	
Collie Coal Measures	PCM	Collie Coal Measures	
Colville Sandst	TC	Colville Sandstone	
Como Sandst Mbr	TKC	Como Sandstone Member	
Coolyena Grp	KC	Coolyena Group	
Coomberarie Fm	PAC	Coomberarie Formation	
Coyrie Fm	PBC	Coyrie Formation	
Cretaceous	K	Cretaceous	
Cronin Sandst	JCR	Cronin Sandstone	
Cundlego Fm	PBU	Cundlego Formation	
Dandaragan Sandst	KD	Dandaragan Sandstone	
Devonian	D	Devonian	
Devonian+ ?Permian	D+PE?	Devonian and Possible Permian	
Diorite	AD	Archean_Diorite	
Dirk Hartog Fm	SD	Dirk Hartog Formation	
Dolerite	ADO	Archean_Dolerite	
Dolerite	PRDO	Proterozoic_Dolerite	
Donnybrook Sandst	PD	Donnybrook Sandstone	
Duck Creek Fm	WD	Duck Creek Formation	
Elder Sandst	DE	Elder Sandstone	
Emeriau Sandst	KR	Emeriau Sandstone	
Eneabba Fm	JE	Eneabba Formation	
Enga Sandst	CE	Enga Sandstone	
Errabiddy Sandst	PAE	Errabiddy Sandstone	
Erskine Sandst	TRE	Erskine Sandstone	
Fairfield Grp	DCF	Fairfield Group	
Felsic Volcanics	AFV	Archean_Felsic Volcanics	
Flat Rock Fm	PRF	Flat Rock Formation	
Frezier Sandst	KF	Frezier Sandstone	
Gabbro	AOG	Archean_Gabbro	
Gage Fm	KWG	Gage Formation	
Gardiner Beds	PRGB	Gardiner Beds	
Gearle Siltstone	KG	Gearle Siltstone	
Gingin Chalk	KCG	Gingin Chalk	
Glenhill Fm	PCG	Glenhill Formation	
Gnangara Sand	QN	Gnangara Sand	
Gneiss	AN	Archean_Gneiss	

Reference Code name	Code	Description	Age/Stratigraphic Unit
Goldwyer Fm	OG	Goldwyer Formation	
Granite	AG	Archean_Granite	
Granitoid Gneiss	AGN	Archean_Granitoid Gneiss	
Granodiorite	AGG	Archean_Granodiorite	
Grant Grp	CPG	Grant Group	
Greenough Sandst	JLG	Greenough Sandstone	
Guildford Clay	QG	Guildford Clay	
Gumhole Fm	DUG	Gumhole Formation	
Hampton Sandst	TH	Hampton Sandstone	
Hardey Fm	FH	Hardey Formation	
Hardman Fm	PHA	Hardman Formation	
Hart Dolerite	PRHD	Hart Dolerite	
Henley Sandst Mbr	KCOH	Henley Sandstone Member	
High Cliff Sandst	PG	High Cliff Sandstone	
High Cliff Sandst+Holmwood Shl	PGPH	High Cliff Sandstone and Holmwood Shale	
Holmwood Shl	PH	Holmwood Shale	
Ilma Fm	PRI	Ilma Formation	
Irregully Fm	PRIR	Irregully Formation	
Irwin River Measure	PI	Irwin River Measure	
Jarlemai Siltstone	JKR	Jarlemai Siltstone	
Jarrad Sandst Mbr	POJ	Jarrad Sandstone Member	
Jeerinah Fm	PFJ	Jeerinah Formation	
Jillawarra Fm	PRJ	Jillawarra Formation	
Jingemia Dolomite	PRID	Jingemia Dolomite	
Jurassic	J	Jurassic	
Jurassic to Cretaceous	JK	Jurassic to Cretaceous	
Kardinya Shl Mbr	KCOK	Kardinya Shale Member	
Keep Inlet Beds	PKI	Keep Inlet Beds	
Kellys Knob Sandst Mbr	DUK	Kellys Knob Sandstone Member	
Keogh Fm	PWK	Keogh Formation	
King Leopold Sandst	PKL	King Leopold Sandstone	
Kings Park Fm	TK	Kings Park Formation	
Kockatea Shl	TRK	Kockatea Shale	
Kojarena Sandst	JMK	Kojarena Sandstone	
Korojon Calcarenite	KK	Korojon Calcarenite	
Kundip Quartzite	PRKQ	Kundip Quartzite	
Kybulup Schist	PRK	Kybulup Schist	
Kylena Volcanics	PFK	Kylena Volcanics	
Lambo Complex	PRL	Lambo Complex	
Lancelin Fm	KCL	Lancelin Formation	
Laurel Fm	CLL	Laurel Formation	
Lawford Fm	TL	Lawford Formation	
Leederville Fm	KWL	Leederville Formation	
Leederville Fm Mowen Mbr	KWLMO	Leederville Formation_Mowen Member	
Leederville Fm Quindalup Mbr	KWLQ	Leederville Formation_Quindalup Member	
Leederville Fm Vasse Mbr	KWLV	Leederville Formation_Vasse Member	
Lennis Sandst	DLE	Lennis Sandstone	
Lerida Granite	PRLG	Lerida Granite	
Lesueur Sandst	TRL	Lesueur Sandstone	
Lightjack Fm	PLJ	Lightjack Formation	
Linnekar Fm	CML	Linnekar Formation	
Liveringa Grp	PL	Liveringa Group	
Loongana Sandst	KL	Loongana Sandstone	



Reference Code name	Code	Description	Age/Stratigraphic Unit
Lower Callawa Formation	KCA_L	Lower Callawa Formation	
Luluigui Fm	DL	Luluigui Formation	
Lyons Fm	CPL	Lyons Formation	
Maddina Volcanics	PFM	Maddina Volcanics	
Madura Fm	KMA	Madura Formation	
Mafic Intrusive	AO	Archean_Mafic Intrusive	
Mafic Rock	AM	Archean_Mafic Rock	
Mafic Schist	AMS	Archean_Mafic Schist	
Mallens Sandst	PBM	Mallens Sandstone	
Mariginiup Mbr	KWLM	Mariginiup Member	
Marra Mamba Iron Fm	PM	Marra Mamba Iron Formation	
McAlly Shl	PRMA	McAlly Shale	
McIntosh Gabro	PRMC	McIntosh Gabro	
Meda Fm	JKM	Meda Formation	
Mellinjerie Limest	DM	Mellinjerie Limestone	
Mendena Fm	PTM	Mendena Formation	
Mesozoic	M	Mesozoic	
Metasedimentary Rock	AS	Archean_Metasedimentary Rock	
Migmatite	AGA	Archean_Migmatite	
Milligans Beds	CLM	Milligans Beds	
Mirrabooka Mbr	KCOM	Mirrabooka Member	
Molecap Greensand	KCM	Molecap Greensand	
Moogooloo Sandst	PWM	Moogooloo Sandstone	
Moola Bulla Fm	PRMB	Moola Bulla Formation	
Moonyoonooka Sandst	JLM	Moonyoonooka Sandstone	
Mosquito Creek Fm	AMC	Archean_Mosquito Creek Formation	
Mount Mc Rae Shl	PHS	Mount Mc Rae Shale	
Mount McGrath Fm	WM	Mount McGrath Formation	
Mount Roe Basalt	FR	Mount Roe Basalt	
Mt. Parker Sandst	PRP	Mount Parker Sandstone	
Muderong Shl	KM	Muderong Shale	
Mulkerins Granite	PRM	Mulkerins Granite	
Mullaloo Sandst Mbr	TKM	Mullaloo Sandstone Member	
Munkayarra Fm	TRY	Munkayarra Formation	
Nakina Fm	KNA	Nakina Formation	
Nallanaring Volcanic Mbr	PFJN	Nallanaring Volcanic Member	
Nambeet Fm	ONA	Nambeet Formation	
Nanarup Limest	TPWN	Nanarup Limestone	
Nangetty Fm	PN	Nangetty Formation	
Nanutarra Fm	KNY	Nanutarra Formation	
Napier Fm	DUN	Napier Formation	
Newmarracarra Limest	JMM	Newmarracarra Limestone	
Nita Fm	ON	Nita Formation	
Noonkanbah Fm	PNO	Noonkanbah Formation	
Not Logged	NL	Not Logged	
Nullara Limest	DN	Nullara Limestone	
Nullarbor+Wilson Bluff Limest	TNW	Nullarbor and Wilson Bluff Limestone	
Nura Nura Mbr	PPN	Nura Nura Member	
Olympio Fm	AHO	Archean_Olympio Formation	
Ordovician	O	Ordovician	
Osborne Fm	KCO	Osborne Formation	
Otorowiri Siltstone Mbr	JKO	Otorowiri Siltstone Member	
Palaeozoic	PA	Palaeozoic	

Reference Code name	Code	Description	Age/Stratigraphic Unit
Pallinup Siltstone	TPP	Pallinup Siltstone	
Parda Formation	KPR	Parda Formation	
Parmelia Fm	JKP	Parmelia Formation	
Paterson Fm	PAT	Paterson Formation	
Pegmatite	AGP	Archean_Pegmatite	
Pentecost Sandst	PKP	Pentecost Sandstone	
Permian	PE	Permian	
Permian to Jurassic	PEJ	Permian to Jurassic	
Pillara Limest	DPL	Pillara Limestone	
Pillingini Tuff	PFP	Pillingini Tuff	
Pincombe Fm	PCP	Pincombe Formation	
Pinjar Mbr	KWLP	Pinjar Member	
Plantagenet Grp	TP	Plantagenet Group	
Point Spring Sandst	CLP	Point Spring Sandstone	
Poison Hill Greensand	KCP	Poison Hill Greensand	
Poole Sandst	PP	Poole Sandstone	
Poulton Fm	DP	Poulton Formation	
Precambrian	PRC	Precambrian	
Proterozoic	PR	Proterozoic	
Proterozoic Dolomite	PRB	Proterozoic_Dolomite	
Proterozoic Dyke	PRD	Proterozoic_Dyke	
Proterozoic Gneiss	PRN	Proterozoic_Gneiss	
Proterozoic Granite	PRG	Proterozoic_Granite	
Proterozoic Quartz	PRQ	Proterozoic_Quartz	
Pyroxenite	AUX	Archean_Pyroxenite	
Quartz Gabbro	AOQ	Archean_Quartz Gabbro	
Quartz+Mica Schist	ALM	Archean_Quartz-Mica Schist	
Quaternary	Q	Quaternary	
Quaternary+Cainozoic	Q+CZ	Quaternary and Cenozoic	
Quaternary+Superficial Fms	QTSF	Quaternary and Superficial Formations	
Quaternary+Tertiary	QT	Quaternary to Tertiary	
Ragged Range Conglomerate Mbr	DUR	Ragged Range Conglomerate Member	
Rockingham Sand	TRO	Rockingham Sand	
Roy Hill Shl Mbr	PFJR	Roy Hill Shale Member	
Sabina Sandst	TRS	Sabina Sandstone	
Safety Bay Sand	QS	Safety Bay Sand	
Schist	AH	Archean_Schist	
Septimus Limest	CS	Septimus Limestone	
Serpentinite	AUS	Archean_Serpentinite	
South Perth Shl	KWS	South Perth Shale	
Stirling Range Fm	PRS	Stirling Range Formation	
Stockton Fm	PS	Stockton Formation	
Stonewall Sandst	PRST	Stonewall Sandstone	
Sue Coal Measures	PSC	Sue Coal Measures	
Surficial deposits	CZS	Surficial deposits	
Talc Carbonate Rock	AUC	Archean_Talc Carbonate Rock	
Tamala Limest	QTL	Tamala Limestone	
Tandalgoo Sandst	DT	Tandalgoo Sandstone	
Tertiary	T	Tertiary	
Throssell Shl	PRTH	Proterozoic_Throssell Shale	
Tickalara Metamorphics	PRTM	Tickalara Metamorphics	
Toolonga Calcilutite	KT	Toolonga Calcilutite	
Triassic	TR	Triassic	

Reference Code name	Code	Description	Age/Stratigraphic Unit
Tumblagooda Sandst	ST	Tumblagooda Sandstone	
Tunganary Fm	PRT	Tunganary Formation	
Turee Creek Fm	PWT	Turee Creek Formation	
Ultramafic Rock	AU	Archean_Ultramafic Rock	
Unknown	NULL	Unknown	
Upper Callawa Formation	KCA_U	Upper Callawa Formation	
Wade Creek Sandst	PRWC	Wade Creek Sandstone	
Wagina Sandst	PW	Wagina Sandstone	
Wallal Sandst	JLL	Wallal Sandstone	
Wanna Fm	DWA	Wanna Formation	
Wanneroo Mbr	KWLW	Wanneroo Member	
Warnbro Grp	KLW	Warnbro Group	
Warrie Mbr	PFJWA	Warrie Member	
Weathered Bunbury Basalt	KBW	Weathered Bunbury Basalt	
Weeli Wolli Fm	PHJ	Weeli Wolli Formation	
Werillup Fm	TPW	Werillup Formation	
Whitewater Volcanics	PRWV	Whitewater Volcanics	
Wicherina Sandst Mbr	PNW	Wicherina Sandstone Member	
Windalia Radiolarite	KW	Windalia Radiolarite	
WindaliaRadiolarite+Muderong Shl	KWKM	Windalia Radiolarite and Muderong Shale	
Windjana Limest	DW	Windjana Limestone	
Winifred Fm	CPW	Winifred Formation	
Wittenoom Dolomite	PHD	Wittenoom Dolomite	
Woodada Fm	TRW	Woodada Formation	
Woodrarrung Sandst	PAW	Woodrarrung Sandstone	
Woongarra Volcanics	PHWV	Woongarra Volcanics	
Wthrd Coomberarie Fm	PACW	Weathered Coomberarie Formation	
Wthrd Amphibolite	AMAW	Archean_Weathered Amphibolite	
Wthrd Andesite	AAW	Archean_Weathered Andesite	
Wthrd Archean	AWE	Archean_Weathered	
Wthrd Banded Iron Fm	ACIW	Archean_Weathered Banded Iron Formation	
Wthrd Basalt	ABW	Archean_Weathered Basalt	
Wthrd Bedrock	AEW	Archean_Weathered Bedrock	
Wthrd Boongal Fm	FOBW	Weathered Boongal Formation	
Wthrd Bow River Granite	PBOW	Weathered Bow River Granite	
Wthrd Brockman Iron Fm	PHBW	Weathered Brockman Iron Formation	
Wthrd Bunjinah Fm	FUW	Weathered Bunjinah Formation	
Wthrd Chert	ACW	Archean_Weathered Chert	
Wthrd Diorite	ADW	Archean_Weathered Diorite	
Wthrd Dolerite	ADOW	Archean_Weathered Dolerite	
Wthrd Dolerite	PRDOW	Weathered Proterozoic_Dolerite	
Wthrd Duck Creek Fm	WDW	Weathered Duck Creek Formation	
Wthrd Felsic Volcanics	AFVW	Archean_Weathered Felsic Volcanics	
Wthrd Gabbro	AOGW	Archean_Weathered Gabbro	
Wthrd Gneiss	ANW	Archean_Weathered Gneiss	
Wthrd Granite	AGW	Archean_Weathered Granite	
Wthrd Granitoid Gneiss	AGNW	Archean_Weathered Granitoid Gneiss	
Wthrd Granitoid Gneiss	AW	Archean_Weathered Granitoid Gneiss	
Wthrd Granodiorite	AGGW	Archean_Weathered Granodiorite	
Wthrd Hardey Fm	FHW	Weathered Hardey Formation	
Wthrd King Leopold Sandst	PKLW	Weathered King Leopold Sandstone	
Wthrd Kylena Volcanics	PFKW	Weathered Kylena Volcanics	
Wthrd Lyons Fm	CPLW	Weathered Lyons Formation	

Reference Code name	Code	Description	Age/Stratigraphic Unit
Wthrd Maddina Volcanics	PFMW	Weathered Maddina Volcanics	
Wthrd Mafic Intrusive	AOW	Archean_ Weathered Mafic Intrusive	
Wthrd Mafic Rock	AMW	Archean_ Weathered Mafic Rock	
Wthrd Mafic Schist	AMSW	Archean_ Weathered Mafic Schist	
Wthrd Marra Mamba Iron Fm	PMW	Weathered Marra Mamba Iron Formation	
Wthrd Metasedimentary Rock	ASW	Archean_ Weathered Metasedimentary Rock	
Wthrd Migmatite	AGAW	Archean_ Weathered Migmatite	
Wthrd Mosquito Creek Fm	AMCW	Archean_ Weathered Mosquito Creek Formation	
Wthrd Mount McGrath Fm	WMW	Weathered Mount McGrath Formation	
Wthrd Mount Roe Basalt	FRW	Weathered Mount Roe Basalt	
Wthrd Nallanaring Volcanic Mbr	PFJNW	Weathered Nallanaring Volcanic Member	
Wthrd Noonkanbah Fm	PNOW	Weathered Noonkanbah Formation	
Wthrd Parmelia Fm	JKPW	Weathered Parmelia Formation	
Wthrd Pegmatite	AGPW	Archean_ Weathered Pegmatite	
Wthrd Pillingini Tuff	PFPW	Weathered Pillingini Tuff	
Wthrd Precambrian	PRCW	Weathered Precambrian	
Wthrd Proterozoic	PRTW	Weathered Proterozoic	
Wthrd Proterozoic Gneiss	PRNW	Proterozoic_Weathered Gneiss	
Wthrd Proterozoic Granite	PRGW	Weathered Proterozoic_Granite	
Wthrd Quartz+Mica Schist	ALMW	Archean_ Weathered Quartz-Mica Schist	
Wthrd Schist	AHW	Archean_ Weathered Schist	
Wthrd Tumblagooda Sandst	STW	Weathered Tumblagooda Sandstone	
Wthrd Turee Creek Fm	PWTW	Weathered Turee Creek Formation	
Wthrd Ultramafic Rock	AUW	Archean_ Weathered Ultramafic Rock	
Wthrd Weeli Wolli Fm	PHJW	Weathered Weeli Wolli Formation	
Wthrd Wittenoom Dolomite	PHDW	Weathered Wittenoom Dolomite	
Wthrd Yarrowolya Fm	PAYW	Weathered Yarrowolya Formation	
Wthrd Yeerinah Fm	PFJW	Weathered Yeerinah Formation	
Wyndham Shl	PTW	Wyndham Shale	
Yarragadee Fm	JY	Yarragadee Formation	
Yarragadee Fm+Champion Bay Grp	JYJM	Champion Bay Group to Yarragadee Formation	
Yarragadee+Cockleshell Gully Fms	JYJO	Yarragadee Formation and Cockleshell Gully Formation	
Yarraloola Conglomerate	KNY1	Yarraloola Conglomerate	
Yarrowolya Fm	PAY	Yarrowolya Formation	
Yellow Drum Fm	DUY	Yellow Drum Formation	
Yoganup Fm	TY	Yoganup Formation	
Yurabi Fm	PRY	Yurabi Formation	

**Definition:** The predominant type of lithological (rock) material found within a bore depth interval.

Reference Code name	Code	Description	Lithology
(none)			
(none)	()		
actionalite	ACT		
agglomerate	AGGL		
aggregate	AGGR		
alluvium	ALV		
amphiboles	AMPH		
amphibolite	AMA		
andesite	AD		
anorthosite	AN		
anthropogenic material	ANTHR		
apatite	APA		
aplite	AP		
arenite	ARE		
arkose (ic)	ARK		
asbestos	GNST		
ash	AS		
asphalt	ASP		
banded iron fm	BIF		
basalt	BAS		
basic rock	BRK		
bauxite	BX		
bedrock	BDR		
biotite	BIO		
bitumen	BI		
black	BLK		
black mud	BMUD		
black sand	BKSD		
blue	BL		
boulders	BLD		
breccia	BREC		
brown	BR		
burrow	BU		
calcarenite	CALCA		
calcareous	CALC		
calcilutite	CALCI		
calcite	CALCT		
calcrete	CAL		
cap rock	CA		
carbonaceous	CARB		
carbonate	CAR		
cavernous	CAV		
cavity	CVY		
cement	CMT		
cemented	CMTD		
chalcedonic	CHALC		
chalcedony	CHAL		
chalk	CHK		
chert	CHT		
chlorite (ic)	CHL		

Reference Code name	Code	Description	Lithology
clay	CL		
clayey	CLY		
clayey sand	CLYSD		
clayey silt	CLSLT		
claystone	CLST		
coal	COL		
coarse	CSE		
coarse river wash	CSER		
coarse sand	CSD		
cobbles	COB		
coffee rock	COFR		
colluvium	CLV		
concrete	CO		
conglomerate	CGL		
coral	COR		
dacite(ic)	DAC		
dark	DK		
debris	DE		
diorite	DI		
dolerite	DO		
dolerite dyke	D		
doleritic	DOC		
dolomite	DOL		
dunite	DU		
dyke	DY		
eluvium	ELV		
epidote	EP		
feldspar	FS		
felsic extrusive rock	FELEX		
felsic intrusive rock	FELI		
felsic volcanic rock	FELV		
ferricrete	FECT		
ferruginous	FERR		
fill	FI		
fine sand	FSD		
foliated	FOL		
formation	FM		
fossiliferous	FOSS		
fractured	FRA		
fractured rock	FRK		
fragments	FRG		
gabbro	GAB		
garnet	GT		
glauconite	GLAU		
gneiss	GNS		
goethite	GO		
gossan	GSN		
grainstone	GRA		
granite	GRT		
granite gneiss	GRG		
granitic material	GRM		
granitic rock	GRTR		
granodiorite	GDI		

Reference Code name	Code	Description	Lithology
granulite	GRN		
graphite (ic)	GRAPH		
gravel	GR		
gravelly	GRVY		
green	GN		
greenstone	GNT		
grey	GRY		
greywacke	GW		
grit	GRI		
gritty	GRIT		
gypsum	GYP		
haematite	HA		
hardpan	HAP		
heavy minerals	HMIN		
humic material	HM		
hydrocarbon odour	HYO		
ilmenite	IM		
indurated material	IND		
iron staining	FEST		
ironstone	IRST		
ironstone gravel	IRSTG		
jasper	JS		
jaspilite	JAS		
joints	JTS		
kaolin	KAOL		
kaolinite	KAO		
Kaolinitic	KAOLI		
komatiite	KO		
lamprophyre	LAM		
laterite	LAT		
lateritic	LATE		
lava	LAV		
lignite	LIG		
lime	LS		
lime sand	LSD		
limestone	LST		
limonite	LMNT		
loam	LM		
loamy	LMY		
mafic minerals	MFM		
mafic rock	AM		
mafic rock	MF		
mafic volcanic	MFV		
magnesite	MS		
magnetic	MAG		
magnetite	MT		
manganese	MA		
marl	MARL		
metabasalt	MBAS		
metal	MTL		
metamorphic	META		
metamorphic dolerite	MDO		
metaquartzite	MTQZ		

Reference Code name	Code	Description	Lithology
metasediments	MET		
mica	MIC		
micaceous	MICA		
micrite	MICR		
migmatite	MIG		
millimetres	MM		
monzodiorite	MOD		
monzonite	MON		
mottled zone	MZ		
mud	MD		
mudstone	MDST		
mylonite	MYL		
nodules	NDL		
orange	ORNG		
ore	OR		
organic	ORG		
organic material	ORGM		
overburden	OVBD		
packstone	PAC		
peat	PT		
peaty	PTY		
pebbles	PBL		
pegmatite	PEG		
pelite	PEL		
phyllite	PHY		
pink	PK		
pisolites	PSL		
porphyritic	PORP		
porphyry	POR		
pyrite	PYR		
pyritic	PY		
pyroxenite	PYX		
quartz	QTZ		
quartz vein	QTZV		
quartzite	QTZT		
red	RD		
rhyolite	RHY		
riebeckite	RIE		
roadbase	RB		
rock	RK		
rubble	RBL		
salt	SALT		
salt - sodium chlrde	NA		
sand	SD		
sandstone	SS		
sandy	SDY		
sandy clay	SDYCL		
sandy silt	SDSLT		
saprolite	SAP		
schist	SCH		
schistose	SCHI		
seaweed	SWD		
sedimentary rock	SED		



Reference Code name	Code	Description	Lithology
sediments	SEDS		
sericite	SER		
serpentine	SERPE		
serpentinite	SERP		
shale	SH		
sheared	SHD		
shells	SHEL		
shelly	SHELY		
silcrete	SLC		
silica	SI		
silicate (opaline)	SILC		
siliceous	SIL		
siliceous iron formation	SIF		
silicified	SILI		
silt, silty	SLT		
siltstone	SLST		
silty clay	SLTCL		
silty sand	SLTSD		
slate	SLTE		
sludge	SLD		
soil	SL		
spongite	SPG		
stones	ST		
stoney	STY		
sulphides	SLPH		
talc	TA		
tar	TAR		
tillite	TILL		
tillite shale	TISH		
tillitic sandstone	TISS		
travertine	TRA		
tremolite	TR		
tuff	TF		
tuffaceous rock	TFC		
ultramafic	UM		
vermiculite	VE		
volcanics	VLCS		
vuggy	VU		
wacke	WA		
wackestone	WAST		
waste sludge	WSL		
waste, landfill waste	WAS		
water	WTR		
water injection	WTIN		
weathered	WD		
weathered basement rock	WDR		
white	WH		
yellow	Y		

**Code table/group:** Role of interpreter

*Data table: Stratigraphy*

**Definition:** The person and organization reporting a lithological log description or interpreted summary, and by inference, the associated reliability of the log or summary



## Domain: Sample information

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

### Data table: Samples

Domain: Sample information

**Definition:** A representative portion of matrix (sample medium), or a set of measurements or observations, collected at a singular site, date, time and depth by a particular collection regime.

### Code table/group: Sample collection devices

Data table: Samples

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

Reference Code name	Code	Description	Sample collection devices
Autosampler (composite)	AUTOC	Composite Autosampler - composite of discrete times	
Autosampler (discrete)	AUTOD	Discrete Autosampler - single shot taken	
Bailer	BAILR	Bailer - bore sample extraction carried out with a bailer (scoop or bucket)	
Benthic chamber	BENTH	Benthic chamber	
Box trap - 2cm mesh, 470mm x 210mm x 600mm	BTRAP2CM	Box trap - 2cm mesh, 470mm x 210mm x 600mm	
Box trap - 3mm mesh, 260mm x 260mm x 460mm	BTRAP3MM	Box trap - 3mm mesh, 260mm x 260mm x 460mm	
Container	CONT	Container	
Corer	CORER	Core sample taken within a localised radius of a sampling point	
DGT probe	DGTP	Diffusive gradients in thin films (DGT) technique using a passive sampler that houses a binding gel, diffusive gel and membrane filter	
Diffusion cell	DIFFC	A device that collects samples via diffusion	
Extendable pole sampler	EXTPS	Extendable pole sampler	
Fyke net - 105cm x 75cm opening	FYKE105CM	Fyke net - 105cm x 75cm opening	
Fyke net - 70cm x 55cm opening	FYKE70CM	Fyke net - 70cm x 55cm opening	
Integrating hose/pipe (25mm int diam)	IHP25	A hose or pipe with a 25mm internal diameter that is used for taking an integrated-over-depth sample	
Lysimeter	LYSIM	An instrument for measuring the percolation of water through soils and for determining the soluble constituents removed in the drainage	
Net	NET	Sampling net	
None	()	None	
Ponar grab sampler	PGS	Ponar grab sampler - a device for collecting sediment samples	
Pump (Airlift)	PUMPA	Airlift pump - sample extraction using high-pressure air to lift the sample	
Pump (Centrifugal)	PUMPC	Centrifugal pump - sample extraction carried out with a centrifugal (impellor) pump	
Pump (Electric)	PUMPE	Electric pump - sample extraction carried out with an electric pump (centrifugal or submersible)	
Pump (Inertial valve)	PUMPI	Inertial valve pump - sample extraction carried out with an inertial valve pump (eg Waterra)	
Pump (Jet)	PUMPJ	Jet pump - sample extraction carried out with a jet pump (combined centrifugal and nozzle-venturi arrangement)	
Pump (Low Flow Air)	PUMPLFA	Low flow air pump. Uses low-pressure air to prevent sample contamination or loss through turbulence	

Reference Code name	Code	Description	<i>Sample collection devices</i>
Pump (Low Flow)	PUMPLF	Low flow pump - sample extraction carried out with a low flow bladder pump.	
Pump (Peristaltic)	PUMPP	Peristaltic pump - sample extraction carried out with a peristaltic pump (employs wave-like constriction of a flexible tube)	
Pump (Submersible)	PUMPS	Submersible pump - 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	PUMPSCT	Submersible pump - 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)	PUMPU	Turbine pump - sample extraction carried out with a turbine pump (type of centrifugal pump)	
Pump (unspecified)	PUMP	Pump of an unspecified type	
Pump (Wind)	PUMPW	Wind pump - sample extraction carried out with a wind(mill) pump (usually a single-action piston pump powered by wind)	
Reverse Circulation Air Core	RCCOR	Reverse Circulation Air Core	
Sampling Tube	SAMPT	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	SCRPG	Scraping of substance from a substrate	
Screened auger	SNAUG	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)	SEDVV	Van Veen grab sampler - a device for collecting sediment samples	
Sweep net - 250 micron mesh, D-frame.	SNET250	Sweep net - 250 micron mesh, D-frame.	
Unknown	UNKWN	Unknown method	
Vacuum sampler	VACSA	Vacuum sampler	
Van Dorn sampler	VANDS	Vertical or Horizontal open ended cylinder sampler with double release action stoppers for collecting samples at selected depths	
Weighted bottle	WTBTL	Weighted bottle - a 2L bottle lowered slowly through the water column to collect an integrated sample	

**Code table/group: Sample collection frequencies**

*Data table: Samples*

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

Reference Code name	Code	Description	<i>Sample collection frequencies</i>
Continuous / Logger	CONT	Continuous / Logger	
Event	EVENT	Event	
Irregular	IRREG	Irregular	
Once off	ONCE	Once off	
Regular	REG	Regular	
Unknown	UNK	Unknown	

**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 Code name	Code	Description	Sample collection methods
Artesian Flow	ARTFL	Artesian Flow - sample taken from a surface-flowing well or bore	
Benthic sample	BENTH	Benthic samples from water-sediment interface	
Bore development	DEV	Bore development	
Composite depths	COMDE	Composite sample of discrete depths taken from the same location	
Composite localised radius	CLOC	Composite localised radius	
Composite sites	CSITE	Composite sample of discrete sites	
Composite sites intd over depth	CSINT	Composite sample of discrete sites each integrated over depth	
Composite times	CTIME	Composite sample of discrete times	
Cutting	CUT	Cutting - portion of plant cut from main body	
Data Logger	LOG	Data Logger	
Grab phyto	GRABP	Grab sample for phytoplankton analysis. Means of identifying and securing phytoplankton data.	
Grab sample	GRAB	Grab - discrete sample taken at a singular place, depth and time.	
Inert gas lift	INGAS	Inert gas lift	
Injection test Bore	INJEC	Injection test Bore	
Insitu	INSIT	Insitu reading or observation	
Integrated over depth	INTDE	Integrated over depth	
Integrated phyto	INTDEP	Integrated over depth for phytoplankton analysis. Means of identifying and securing phytoplankton data.	
Laboratory sample	LAB	Laboratory sample	
Over-time	OVERT	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	PUMPD	Pumped	
Pumping test	PUMPT	Pumping (test) - constant-rate or step-drawdown pumping test to determine the hydrogeological character of an aquifer	
Purge	PURGE	Purge	
Reverse Circulation Air Core	RCCOR	Reverse Circulation Air Core	
Splitspoon sample	SPLIT	Splitspoon sample - a longitudinally split sampling tube that is split apart on retrieval to access the bore formation sample obtained.	
Unknown method	UNKWN	Unknown method	

**Definition:** The physical medium being sampled or measured

Reference Code name	Code	Description	Sample matrices
(none)	()	(none)	
Air	AIR	Air	
Animal tissues analysed for constituents	TISSA	Animal tissues analysed for constituents	
Leachate	LEACH	Leachate	
Macroinvertebrate tissue (aquatic insects, crustaceans, molluscs and worms) analysed for constituents	MACIN	Macroinvertebrate tissue (aquatic insects, crustaceans, molluscs and worms) analysed for constituents	
Periphyton (attached algae) analysed for constituents	PERIP	Periphyton (attached algae) analysed for constituents	
Plant tissues analysed for constituents	TISSP	Plant tissues analysed for constituents	
Pore water	POREW	Pore water - the water filling the spaces between grains of sediment	
Regolith - weathered or transported material overlying more coherent bedrock	REGOL	Regolith - weathered or transported material overlying more coherent bedrock	
Sediment sample	SEDIM	Sediment sample	
Sludge sample	SLUDG	Sludge sample	
Soil sample	SOIL	Soil sample	
Water sample	WATER	Water taken from one of three natural sources - rain, underground and surface water	

**Code table/group: Sample types**

Data table: Samples

**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 Code name	Code	Description	Sample types
Bottom sample	ST_BOTT	Bottom sample	
Container blank - QA	QA_CTRBK	Container blank - QA	
Field blank - QA	QA_FLDBK	Field blank - QA	
Field duplicate - QA	QA_FLDDP	Field duplicate - QA	
Field duplicate spiked - QA	QA_FLDDS	Field duplicate spiked - QA	
Laboratory blank - QA	QA_LABBK	Laboratory blank - QA	
Laboratory duplicate - QA	QA_LABDU	Laboratory duplicate - QA	
Level only - STAND	ST_LEVLO	Level only - STAND	
Pollution - STAND	ST_POLL	Pollution - STAND	
Profile	ST_PROFL	Profile	
Recovery obtained from addition of a known concentration of spike to sample - QA	QA_RECOV	Recovery obtained from addition of a known concentration of spike to sample - QA	
Replicate sample - QA	QA_REP	Replicate sample - QA	
Rinsate blank sample obtained from rinsing collection equipment - QA	QA_RINBK	Rinsate blank sample obtained from rinsing collection equipment - QA	
Solution from a laboratory - QA	QA_LABSO	Solution from a laboratory - QA	
Source solution blank - QA	QA_SOSBK	Source solution blank - QA	
Standard	ST_STAND	Standard	
Surface sample	ST_SURF	Surface sample	
Trip or transport blank - QA	QA_TRPBK	Trip or transport blank - QA	

## Domain: Reading information

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

### Data table: Readings

Domain: Reading information

**Definition:** A field measurement, observation or result from laboratory analysis, captured from a sample and identified by a variable (mandatory), a variable qualifier (optional), units (mandatory), and a taxonomic name (optional and used for identification of biota), and expressed as a reading value of type number, range, date or text, optionally prefixed with a value qualifier such as ~, < or >. Refer also to the WIR Variables and Analysis Methods listings available from the Help and references page.

### Code table/group: Variable types

Data table: Readings

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

Reference Code name	Code	Description	Variable types
(none)	()	(none)	
Benzene toluene ethylbenzene xylene	BTEX	Benzene toluene ethylbenzene xylene	
Dithiocarbamates	DTCF	Dithiocarbamates	
Hormones	HORMONES	Hormones	
Hydrocarbon gases	HCGAS	Hydrocarbon gases that occur only in the gas phase at standard temperature and pressure	
Inorganic metals	INORGMETAL	Inorganic metals	
Inorganic non-metals	INORGNOME T	Inorganic non-metals	
Isotope Ratios	ISOTOPERAT	Isotope Ratios	
Micro-organisms	MICROORGA N	Micro-organisms	
Noble gases	NGAS	Noble gases	
Non-OC/OP pest/herbicides	NONOCOP	Non-OC and non-OP pesticides and herbicides	
Nutrients	NUTRIENTS	Nutrients	
Organic metals	ORGMET	Organic metals	
Organic non-metals	ORGNOMET	Organic non-metals	
Organics	ORGANICS	Organics	
Organochlorine pest/herbicides	OCPH	Organochlorine pesticides and herbicides	
Organophosphate pest/herbicides	OPPH	Organophosphate pesticides and herbicides	
Other Aromatic Hydrocarbons	OTHERAH	Other Aromatic Hydrocarbons	
Phenols	PHENOLS	Phenol compounds	
Physical	PHYSICAL	Physical	
Plant pigments	PIGS	Plant pigments	
Plasticisers	PLASTICISE	Plasticisers	
Poly-Aromatic Hydrocarbons	PAH	Polynuclear Aromatic Hydrocarbons or Polycyclic Aromatic Hydrocarbons	
Polychlorinated biphenyls	PCB	Polychlorinated biphenyls	
Pyridines	PY	Pyridines	
Radioanuclides	RADNUC	Radioactive element	
Rate (factor/coefficient)	RATE	Rate (factor or coefficient) that varies according to reading.	
Sample qualifier	SAMPQUALIF	Sample qualifier	
Serotype	SEROTYPE	Serotype - an antigenic property of a cell or virus identified by serological methods	
Surfactant	SURFACTANT	Surface Acting Agent	
Surrogate recovery	SUREC	Surrogate recovery	
Time-Series Meteorological	TSMET	Time-Series Meteorological variables. WIN-equivalent representations of Hydstra rain / climate variables. Not to be used for WIN data.	

Reference Code name	Code	Description	Variable types
Time-Series Water Levels	TSWL	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	TSWQ	Time-Series Water Quality variables. WIN-equivalent representations of Hydstra water quality variables. Not to be used for WIN data.	
Total Petroleum Hydrocarbons	TPHF	Total Petroleum Hydrocarbons	
Unknown	UNKNOWN	Unknown	
Water Level (discrete)	WATERLVL	A discrete (non-continuous) measurement of water level	



**Data table: Various**

Domain: Universal

**Definition:** Various data tables that make use of universal or common codes and reference information.

**Code table/group: Units**

Data table: Various

**Definition:** Units of measurement; standard amounts of physical quantities that are used to express magnitudes of that physical quantity.

Reference Code name	Code	Description	Units
\$	DOLL	dollars	
%	PERC	percent	
%w/v	PERWV	percent weight by volume	
%w/w	PERWW	percent weight for weight	
+/- 1 SD	PM1SD	+/- one standard deviation	
A	AMP	amperes	
A.h	AMPH	ampere hours	
A/m	AMPM	amperes per metre	
ac	ACRE	acres	
ac.ft	ACFT	acre feet	
ac.in	ACIN	acre inches	
AMG	AMG	Australian Map Grid	
angstrom	ANGS	angstroms	
APHA	APHA	measurement	
atm	ATM	atmospheres	
atom/L	ATPL	atoms per litre	
AU	AU	astronomical units	
b	BARN	barns	
bar	BAR	bars	
Bq	BECQ	becquerels	
Bq/L	BL	becquerels per litre	
Btu	BTU	British thermal unit	
C	COUL	coulombs	
cal	CAL	calories	
cal/cm <sup>2</sup> /d	CCD	calories per square cm per day	
ccSTP/g	CCSTG	cm <sup>3</sup> gas at std temp & press /g	
cd	CAND	candela	
cd/m <sup>2</sup>	CAM2	candela per square metre	
cell/cm <sup>2</sup>	CCM2	cells per square centimetre	
cells	TCEL	total cells	
cells/dL	CDL	cells per decilitre (100mL)	
cells/mL	CML	cells per millilitre	
CFU/dL	CFDL	colony forming units per 100mL	
CFU/mL	CFML	colony forming units per mL	
ch	CHN	chains	
Ci	CI	Curie	
cm	CM	centimetres	
cm.km	CMKM	centimetre kilometres	
cm/h	CMH	centimetres per hour	
cm/s	CMS	centimetres per second	
cm/s <sup>2</sup>	CMS2	centimetres per second squared	
cm-1	PCM	per centimetre	
cm <sup>2</sup>	CM2	square centimetres	

Reference Code name	Code	Description	Units
cm3	CM3	cubic centimetres	
comment	COMM	comment	
cSt	CST	centistokes	
ct	CNT	counts	
ct/100mL	CPHM	count per 100 millilitres	
ct/area	CPA	count per area	
ct/min	CPM	count per minute	
ct/mL	CPML	count per millilitre	
ct/s	CPS	count per second	
CU	TCU	colour units	
date	DATE	date	
day	DAY	day	
ddmmyy	DMY	day month 2 digit year	
ddmmyyyy	DM4Y	day month 4 digit year	
deg	DEG	degrees	
deg C	DEGC	degrees Celsius	
deg F	DEGF	degrees Fahrenheit	
dils	DILS	dilutions	
dioptre	DIOP	dioptre	
dyne/cm	DYCM	dyne per centimetre	
e/L	EL	equivalents per litre	
error	ERR	error	
eV	EV	electron volts	
F	FARD	farads	
FAU	FAU	formazin attenuated units	
fib/L	FIBL	fibres per litre	
fm	FATH	fathoms	
fmol/L	FMOLL	femtomol per litre	
FNU	FNU	Formazine nephelometric units	
ft	FOOT	feet	
ft.lb	FTPD	foot pounds	
ft/s	FTS	feet per second	
ft/s2	FTS2	feet per second squared	
ft2	FT2	square feet	
ft3	FT3	cubic feet	
ft3/s	CFS	cubic feet per second	
FTU	FRMZ	formazin turbidity units	
g	G	grams	
g/100g	G100	grams per 100 grams	
g/24h	G24H	grams per 24 hours	
g/kg	GKG	grams per kilogram	
g/L	GML	grams per litre	
g/m3	GM3	grams per cubic metre	
g/mL	GM	grams per millilitre	
g/sec	GMS	grams per second	
g440/m	G440	Gilvin-440 per metre	
gal	GALI	gallons	
gal/day	GIPD	gallons per day	
gal/hr	GALH	gallons per hour	
gal/min	GIPM	gallons per minute	
GL	GL	gigalitres	
GL/day	GLD	gigalitres per day	
gn	GS	gravity	

Reference Code name	Code	Description	Units
gr/gal	GRGL	grains per gallon	
gr/galCl	GRGC	grains per gallon as Cl	
gr/gNaCl	GRGN	grains per gal as NaCl	
grade	GRAD	grade	
Gy	GRAY	gray	
H	HENR	henries	
h	HOUR	hours	
ha	HA	hectares	
ha.m	HAM	hectare metres	
hh:mm	HCM	hours colon minutes	
hhmm	HM	hours no colon minutes	
hp	HP	horsepower	
hPa	HPA	hectopascals	
Hu	HAZN	Hazen units	
Hz	HZ	hertz	
in	INCH	inches	
in.mile	INMI	inch miles	
in/hr	INH	inches per hour	
in/sec	INS	inch per second	
in/sec2	INS2	inches per second squared	
in2	IN2	square inches	
in3	IN3	cubic inches	
J	J	joules	
J/m2	JM2	joules per square metre	
JTU	JCU	Jackson turbidity units	
K	KELV	kelvin	
kcal	KCAL	kilocalories	
kcal/cm2	KCCM	kilocalories per square cm	
kg	KG	kilograms	
kg/d/km2	KDK2	kilograms per day per km2	
kg/day	KGD	kilograms per day	
kg/ha	KGH	kilograms per hectare	
kg/kg	KGKG	kilograms per kilogram	
kg/L	KGL	kilograms per litre	
kg/m	KGM	kilograms per metre	
kg/m2	KGM2	kilograms per square metre	
kg/m3	KGM3	kilograms per cubic metre	
kg/min	GD	kilograms per minute	
kg/sec	KGS	kilograms per second	
kg/t	KGTO	kilograms per tonne	
kg/yr	KGY	kilograms per year	
kJ	KJ	kilojoules	
kJ/m2	JM	kilojoules per square metre	
kJ/m3/h	JH	kilojoules per m3 per hour	
kL	KL	kilolitres	
kL/day	KLD	kilolitres per day	
kL/hr	KLH	kilolitres per hour	
km	KM	kilometres	
km/day	KMD	kilometres per day	
km/h/sec	KMHS	kilometres per hour second	
km/hr	KMH	kilometres per hour	
km2	KM2	square kilometres	
kn	KNOT	knots	

Reference Code name	Code	Description	Units
kohms	KOHM	kilohms	
kPa	KP	kilopascals	
kW	KW	kilowatts	
kW.hr	KWH	kilowatt hours	
L	L	litres	
L/hr	LTHR	litres per hour	
L/L-GDA	LATLO	Latitude/Longitude - GDA2020	
L/min	LMIN	litres per minute	
L/s/ha.h	LSHH	litres per second hectare hour	
L/s/ha.m	LSHM	litres per second hectare min	
L/sec	LS	litres per second	
L/sec/ha	LSH	litres per second per hectare	
lb	PND	pounds	
lbf	PNDF	pound-force	
lm	LUMF	lumens	
lx	LUX	lux	
m	M	metres	
m head	MHD	metres head	
m/area	MPAR	meters per area	
m/day	MD	metres per day	
m/hr	MHR	metres per hour	
m/m	MPM	metres per metre	
m/sec	MS	metres per second	
m/sec <sup>2</sup>	MS2	metres per second squared	
m <sup>2</sup>	M2	square metres	
m <sup>2</sup> /m <sup>2</sup>	M2M2	square metre per square metre	
m <sup>2</sup> /sec	M2S	square metres per second	
m <sup>3</sup>	M3	cubic metres	
m <sup>3</sup> thou	THCM	thousands of cubic metres	
m <sup>3</sup> /day	M3D	cubic metres per day	
m <sup>3</sup> /h	M3H	cubic metres per hour	
m <sup>3</sup> /kg	M3KG	cubic metres per kilogram	
m <sup>3</sup> /s	CUMC	cubic metres per second	
m <sup>3</sup> /sec <sup>2</sup>	M3S2	cubic metres per second sq	
mA	MA	milliAmps	
mbar	MBAR	millibars	
MBq/L	MBPL	millibecquerels per litre	
meq/100g	ME100	milliequivalents per 100 grams	
meq/L	MEL	milliequivalents per litre	
mg	MG	milligrams	
mg/g	MGG	milligram per gram	
mg/kg	MGKG	milligrams per kilogram	
mg/L	MGL	milligrams per litre	
mg/lNaCl	MGLN	milligrams per litre as NaCl	
mg/m <sup>2</sup>	MGM2	milligrams per square metre	
mg/m <sup>3</sup>	MGM3	milligrams per cubic metre	
mg/sec	MGS	milligrams per second	
mgal/d	MGID	million gallons per day	
mi	MILE	miles	
mi/hr	MPH	miles per hour	
mi <sup>2</sup>	MI2	square miles	
micron	MICR	microns	
mil m <sup>3</sup>	MCM	million cubic metres	

Reference Code name	Code	Description	Units
min	MIN	minutes	
mina	MINA	minutes (angle)	
MJ	MJ	megajoules	
MJ/m2	MJSM	megajoules per square metre	
ML	ML	megalitres	
mL	MIL	millilitres	
ML/d/km2	MDSK	megalitres per day per km2	
ML/day	MLD	megalitres per day	
mL/g	MLG	millilitres per gram	
mL/L	MLL	millilitres per litre	
mL/sec	MLS	millilitres per second	
mm	MM	millimetres	
mm.km	MMKM	millimetre kilometres	
mm/day	MMD	millimetres per day	
mm/hr	MMH	millimetres per hour	
mm/m	MMM	millimetre per metre	
mm/sec	MMS	millimetres per second	
mm2	MM2	square millimetres	
mmHg	MMHG	millimetres Mercury	
mmol	MMOL	millimoles	
mmol/kg	MMKG	millimoles per kilogram	
Mohms	MOHM	megaohms	
mol	MOLE	moles	
mol H+/t	MTON	moles H+ per tonne	
mol/kg	MKG	moles per kilogram	
mol/L	MOLL	moles per litre (molarity)	
mol/m3	MM3	moles per cubic metre	
MPa	MPA	megapascals	
mPa	MIPA	millipascals	
mPa.sec	MPAS	millipascal seconds	
MPN/dL	MPNDL	Most Probable Number per 100mL	
MPN/g	MPNG	Most Probable Number per gram	
mrad	MRAD	milliradians	
mS	MSEI	millisiemens	
mS/cm	MSCM	millisiemens per centimetre	
mS/m	MSM	millisiemens per metre	
msec	MSEC	milliseconds	
mV	MV	millivolts	
N	NEWT	newtons	
n mile	NAUT	nautical miles	
ng/g	NGG	nanogram per gram	
ng/L	NGL	nanograms per litre	
no units	()	No units	
NTU	NTU	nephelometric turbidity units	
Num code	NUMCD	Number that signifies a code	
o/oo	PML	per mil	
o/oo CDT	PTCDT	ppt deviation from CDT	
o/oo PDB	PTDBW	ppt deviation from PDB	
o/ooSMOW	PTDOW	ppt deviation from SMOW	
o/ooVPDB	PTDVB	ppt deviation from VPDB	
o/ooVSMO	PTDVW	ppt deviation from VSMOW	
ohm.m	OHMM	ohms per metre	
ohms	OHM	ohms	

Reference Code name	Code	Description	Units
okta	OKTA	okta	
oz	OUNC	ounces	
Pa	PA	pascals	
PA.sec	PAS	pascal seconds	
pCi	PCI	picoCuries	
pCi/L	PCUR	picocuries per litre	
per day	PERD	per day	
per hr	PERH	per hour	
per m	PM	per metre	
per min	PERM	per minute	
per sec	PERS	per second	
pg/g	PGRM	picograms per gram	
pg/kg	PGKG	picograms per kilogram	
plant/ha	PLTHA	plants per hectare	
pMC	PMC	percent Modern Carbon	
pmol/kg	PMKG	picomoles per kilogram	
point	PT	points	
ppb	PPB	part per billion	
ppm	PPM	part per million	
ppt	PPT	part per thousand	
psi	PSI	pound per square inch	
qt	QRT	quarts	
quadrant	QUAD	quadrants	
r	REV	revolutions	
r/day	RPD	revolutions per day	
r/hr	RPH	revolutions per hour	
r/min	RPM	revolutions per minute	
r/sec	RPS	revolutions per second	
rad	RAD	radians	
Ratio	RATI	Ratio	
RF%	RFRQ	Relative frequency	
rod	ROD	rods	
S	SM	siemens	
S/cm	SIECM	Siemens per centimetre	
S/m	SIEM	siemens per metre	
scalar	SCAL	scalar	
sec	SEC	seconds	
seca	SECA	second (angle)	
sr	STRAD	steradian	
Sv	SIEV	sievert	
T	TESL	tesla	
t	TONN	tonnes	
t/day	TOND	tonnes per day	
t/dy/km2	TDK2	tonnes per day per km2	
t/sec	TONS	tonnes per second	
t/yr	TONY	tonnes per year	
terraL	TL	terralitres	
tex	TEX	tex	
ton	TON	tons	
total	TOTL	Total	
u	UAMU	unified atomic mass unit	
uei/s/m2	UEISM	microeinsteins / sec / metre2	
ueinst	UEIN	microeinsteins	

Reference Code name	Code	Description	Units
ug	MICG	micrograms	
ug/kg	UGKG	micrograms per kilogram	
ug/L	UT	micrograms per litre	
ug/m3	UGM3	micrograms per cubic metre	
uin	MINC	microinches	
uL	MLIT	microlitres	
um	UM	micrometres	
umhos/cm	UMCM	micromhos per centimetre	
units	RUNT	relative units	
unknown	UNKWN	unknown	
uohm.cm	MOCM	microhm centimetre	
urad	URAD	microradians	
uS	US	microsiemens	
US ac	ACRU	acres (US Survey)	
US ac.ft	ACFU	acre feet (US Survey)	
US gal	GAL	US gallons	
US gpd	GPD	US gallon per day	
US gpm	GPM	US gallon per minute	
US mg	MGAL	US million gallons	
US mgpd	MGD	US million gallons per day	
uS/cm	MISC	microsiemens per centimetre	
uS/m	MISM	microsiemens per metre	
V	VOLT	volts	
W	WATT	watts	
W/h/m2	WHSM	watts hour per square metre	
W/m2	WSM	watts per square metre	
W/s/m2	WSSM	watt second per sq. metre	
Wb	WEBR	webers	
Wb/m2	WBM2	Webers per Square metre	
yd	YARD	yards	
yd2	YD2	square yards	
yd3	YD3	cubic yard	
years	YEAR	years	
yyyyddd	YRDY	year day	