

Wastewater Symbols

For NetMaps, LiteSpatial (desktop), LiteSpatial Android and myWorld


[NetMaps](#)

[LiteSpatial Android](#)

[LiteSpatial \(desktop\)](#)


[myWorld](#)

myWorld

 [Sewer](#) – composite layer see NetMaps index for components. All assets listed may not be available in all applications.

 [Sewer Retic Boundaries](#)

LiteSpatial Android












 [Sewerage](#) – composite layer see NetMaps index for components. All assets listed may not be available in all applications.












LiteSpatial (desktop)





[Sewerage](#) – composite layer see NetMaps index for components. All assets listed may not be available in all applications.






 [Sewer Retic Boundaries](#)

NetMaps

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Access Chamber (Manhole)

An Access Chamber (Manhole) is an access point to the sewer.

16.15 D
T2201A
0.7 ANE
0.8 FSE

- Top (Reduced) Level – D indicates a drop Manhole
- Access Chamber Number
- A- along, the distance along a boundary from an intersection of boundaries. This will be a first (alignment) distance only.
- F- from, the distance at right angles from a boundary. This will be the second (offset) distance, but may be the first as well.

| <u>Location accuracy</u> | <u>Style</u> | <u>Note</u> | |
|--------------------------|---|---|--|
| A- unreliable | *7.0 AS | Asterisk preceding distance | |
| C- co-ordinated | CO-ORD | If there are no cadastral boundaries nearby the MGA94 co-ords may be used | |
| N- As-con pickup | | | |
| S- surveyed | 7.0 FS | Accurate survey information | |
| U- unsurveyed (approx) | | | |
| <u>Type</u> | | <u>Words above the Information box</u> | <u>Information</u> |
| C- chase |  | CHASE | Access Chamber where the Pressure Main runs into the Gravity System Above ground chamber. Keeps pressure head up in pipe. Mostly found in Treatment |
| D- discharge |  | DISCHARGE | |
| DT- discharge tower |  | DISCHARGE TOWER | |

Plants



- E- deleted access chamber DELETED
- F- overflow OVERFLOW
- G- gate GATE
- H- flushing syphon FS
- I- inspection shaft
- J- maintenance shaft MS
- L- sealed SEALED
- M- standard access chamber
- with Grating
- O- oversized OVERSIZED
- OS- overflow storage OVERFLOW STORAGE
- P- pit access ACCESS
- R- transition TRANSITION TOWER
- T- sandtrap SANDTRAP
- V- vacuum VACUUM

NB: Rodding access points are placed as IS's

Cover Type

- T- trafficable Round
- N- non-trafficable Square



Drop Indicator

- D- drop **D** Where the invert level of pipes entering and exiting the access chamber differs by 0.46 or greater.
- V- vortex **V** A form of DROP access chamber used to reduce flow rate by using a spiral action.



Access Chambers within a CUT and SEALED network are Not In Use and the information box deleted.



HAZARDOUS MANHOLE has an Operation Code - Potential Health Hazard
Contact Industrial Waste Section and quote the Access Chamber Number to obtain further information on the potential hazard.



Out of service ladder – Ladder state is Out of service

Inspection Opening (IO)

Inspection Openings are screw capped end of the gravity pipe running from a wastewater access chamber.

1.2 FS
2.3 FW

Placed at the end (usually upstream) of pipes. Symbolised by a small filled circle with a rectangular information box displaying tie distances and directions similar to an access chambers.




Gravity Pipes

A pipe with gravity flow leading to a Pump Station or Main. Information displayed on each gravity pipe is:

Size: Material
Grade
Upstream Invert Level _____ **Downstream Invert Level**
Length

- Grade: Grades up to 1:50, shown to the nearest 0.1: Grades above 1:50 shown to the nearest whole number. If no grade is available, due to lack of invert level, 0.0 is displayed.

- Status and pipe use, other than Actual and Retic, will be labelled:

| | |
|-------------------------------------|--|
| Actual |  |
| Not in Use (labelled) | NOT IN USE |
| Proposed or Unavailable for Release |  |
| Private (labelled) | PRIVATE |
| |  |

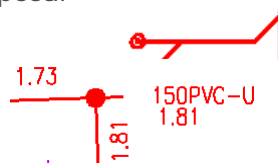
- Sewers, which are CUT and SEALED, are indicated with a cross and C/S. The pipe is labelled



Not In Use and all other text is deleted.

- Type:

| | | |
|----|-------------------------------|---------------------------------------|
| B | - branch | Labelled: BRANCH NAME B.S. |
| C | - collection | Labelled: COLLECTION NAME C.S. |
| D | - treated wastewater disposal | |
| E | - inspection shaft | |
| I | - inlet (Spigot) | |
| M | - main | Labelled: MAIN NAME M.S. |
| O | - overflow | Labelled: OVERFLOW |
| OS | - overflow storage | Labelled: O/STORAGE |
| R | - retic | |
| S | - subsoil | |
| U | - treated wastewater re-use | |



Spigots are the first piece of pipe coming into or going out of an Access Chamber. A spigot is usually about 1m long.

- Pipe Material

| | |
|------|--|
| AC | - asbestos cement |
| AC P | - asbestos cement lined with UPVC pipe |
| BK | - brick conduit |

| | |
|----------|--|
| CI | - cast iron |
| CI P | - cast iron lined with UPVC pipe |
| DI | - ductile iron |
| GRP | - glass reinforced plastic centrifugally cast (HOBAS) |
| GRP/FW | - glass reinforced plastic filament wound |
| HDPE | - high density polyethylene or PE100 plain walled |
| HDPE/PW | - high density polyethylene or PE100 profile walled |
| MDPE | - MDPE- medium density polyethylene or PE80 plain walled |
| P | - unplasticised polyvinyl chloride (UPVC) |
| P/FRP | - PVC lined with fibre reinforced plastic- enviroliner |
| P/PW | - UPVC profile walled |
| P/SW | - UPVC spirally wound |
| PF | - pitch fibre |
| RA | - resin aggregate |
| RC | - reinforced concrete |
| RC/FRP | - reinforced concrete lined with fibre reinforced plastic- enviroliner |
| RC/S | - reinforced concrete segments |
| RC/S_GRP | - reinforced concrete segments lined with glass reinforced plastic pipe or liner |
| RCPL | - reinforced concrete pipe lined with keyed plasticised PVC sheeting |
| RC_CIPL | - reinforced concrete with cured in place liner |
| RC_FPVC | - reinforced concrete lined with shapes formed from rigid UPVC sheeting |
| RC_G | - reinforced concrete with sprayed on cement or gunite lining |
| RC_GRP | - reinforced concrete lined with glass reinforced plastic pipe |
| RC_HDPE | - reinforced concrete lined with high density polyethylene pipe |
| RC_P | - reinforced concrete lined with UPVC pipe |
| RC_P/SW | - reinforced concrete lined with spirally wound UPVC pipe |
| RC_RC | - reinforced concrete lined with another reinforced concrete pipe |
| RC_RCPL | - reinforced concrete lined with another RC pipe lined with keyed plasticised PVC sheeting |
| S | - mild steel cement lined |
| SU | - steel usually unlined and not coated |
| S_SL | - steel with a fusion bonded polyethylene internal lining |
| VC | - vitrified clay |
| VC/FRP | - vitrified clay lined with fibre reinforced plastic- enviroliner |
| VC_HDPE | - vitrified clay lined with high density polyethylene pipe |
| VC_P | - vitrified clay lined with UPVC pipe |
| VC_P/SW | - vitrified clay lined with spirally wound UPVC pipe |

Pipe types of STEEL (S) and GLASS REINFORCED PLASTIC (GRP) display an outside diameter with the nominal pipe size and type.

- Purpose will be Local or Transfer. Transfer being the gravity pipes which join a pressure main to a pump station.
- Main Sewer (MS) collect from smaller gravity pipes and gravitate to WWTP's.

Pipes 300mm or greater are classified as main Wastewaters. The Wastewater name, planset number and section number can be displayed. The three main types of sewers are:

| | | |
|--------------|--------------|--|
| MAIN SEWER | MS displayed | Pipes 450mm in diameter or greater, flowing to a Treatment Plant or Main Pumping Station |
| COLLECTION | CS displayed | Pipes 300mm in diameter or greater, flowing to Pumping Stations, Main Sewers, Branch Sewers or Collection Sewers |
| BRANCH SEWER | BS displayed | Sewers 450mm in diameter or greater, flowing only into Main Sewers or Branch Sewers |



Pipe Overpass

When two pipes cross, the shallower of the two pipes has an overpass symbol attached.



Change Indicator Arrow

Shown where there is a change of pipe type, size, grade, joint or bedding. Arrow is shown perpendicular to the pipe.

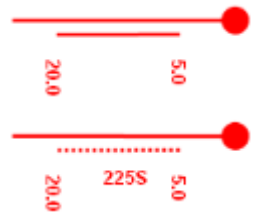


Concrete Encasement and Sleeves

Concrete Encasement or Sleeve is for pipe protection.

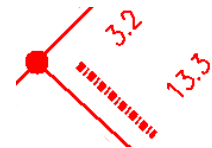
Encasement is indicated with a single line alongside the pipe, on the away side from the cadastral, with both upstream distances from the Wastewater access chamber.

Sleeve is indicated with a single broken line along side the pipe, on the away side from the cadastral boundary, with upstream distances from the access chamber, sleeve size and material type displayed.



Underpinning

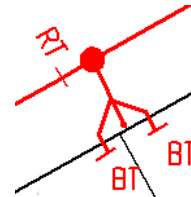
Underpinning is for support for nearby foundations likely to be affected by Wastewater excavation. Shown in correct position with both upstream distances from access chamber displayed and the offset from the pipe centre-line stored, but not displayed.



Traps

Traps are used to minimise gas build up and odour in house connections lines.

- Types are:
 - BT Boundary Trap on connection
 - BTR Boundary Trap required on connection
 - RT Running Trap on a pipe
 - RF Rubber flap on a access chamber



Tunnel

As indicated with square brackets facing towards the tunnel with both distances from downstream access chamber displayed.



Anchor Blocks (AB)

Anchor Blocks are a concrete block used to minimise pipe movement on steep inclines.

Shown when a pipe grade is steeper than 1.5. Displaying AB and the upstream distance from the Wastewater access chamber.



Property Connection

Distance from centre of downstream access chamber

38.0 (More)

Where other information is described i.e. pipe size, tight

I- in distance towards the property at right angles from the pipe. Only shown when 0.5 or more

I 2.3 U1.5

U- up distance the connection is brought up to bring it to within 1.5 of the surface

65.5
11.5 U 2.3

75.9
11.2 U 1.8

- To indicate depth to top of connection, **D** is displayed with a distance. (Country only, and no longer used)
- Connection details are shown within the lot pertaining to the connection.
- Types of connections are indicated with a letter/word adjacent to the upstream distance.

M Multiple In/Up connections. Individual directions and distances are stored with the total in and up distances displayed. Used where connection has to step over existing services.

TIGHT Tight connection. Used where grade from connection to floor level (FL) is less than 1:80 grade

TW Two Way connection. Used where the connection services two properties

FITTINGS ONLY Fittings only connection. Used where the whole lot cannot be served from this connection, only the existing floor level (FL)

V Vertical Connection. Used where connection is at top of Wastewater not to the side

- Any connections greater than 100mm in diameter, the size is shown adjacent, in brackets, to the connection symbol
- Concrete Enclosed connections are indicated with an 'E' which is stored, not displayed
- Extended connections - 150mm connections extended to the property with a connection attached. Pipe size, type, grade, upstream invert level and distance is displayed.



Inspection Shaft Connection (ISC)

The 150mm gravity pipe (Inspection Shaft) is now taken into a property and brought up to within 1m of the surface.

The plumber can cut into the shaft where it suits and must bring it up to the surface and cap.

It is shown by a circle at the end of the pipe and the label ISC.

This *is* the Wastewater connection for that particular lot. A normal connection is shown for the adjoining lot.



Vacuum Sewer

Similar to a Pressure Main, sewerage is vacuum pumped. Used for alternative to deep sewerage Wastewater connected to and passing by a vacuum access chamber. Labelled Vacuum Sewer and displaying a pipe size, type and planset number.



Pumping Station (PS)

Wastewater or WWTP. Circular symbol is shown in the pump station position.



Indicates that this lot has a Private Pump Station.



Pressure Mains (P.M.)

Sewerage gravitates to the Pump Station and is then pumped via Pressure Mains (formerly referred to as Rising Mains) to a Main Wastewater or WWTP.

| Invert level at discharge end of PM | Size and material |
|-------------------------------------|-------------------|
| 22.35 | 100P |
| TERANCA RD P.M. | BT29 |
| Name | Planset |

Types:

- D- treated wastewater disposal Labelled: **TREATED WASTEWATER DISPOSAL**
- L- treated wastewater disposal outlet Labelled: **TREATED WASTEWATER DISPOSAL OUTLET**
- P- permanent
- T- temporary Labelled: **TEMPORARY**
- U- treated wastewater re-use Labelled: **TREATED WASTEWATER RE-USE**

Status and Ownership is shown as per Gravity Pipes.

The size of the valve is stored in the GIS, but not displayed.

Valves shown are:

| | | |
|------------------|------------|-------------------|
| Double Air Valve | DAV | Non-control Valve |
| Single Air Valve | SAV | Non-control Valve |
| Scour | SC | Non-control Valve |
| Gate Valve | GV | Control Valve |
| Reflux Valve | RV | Control Valve |
| Sluice Valve | SV | Control Valve |



Mobile Pumping Branch (MPB)

Used for emergency mobile pumping if Pump Station shuts down. Displayed as a filled in square labelled MPB.



Meter

Magnetic Flow Meter, placed on Pressure Mains to measure flow rate Displayed with a square half-shaded diagonally and labelled MFM.



Treatment Plant

Treats all Wastewater before being disposal or reuse. Displayed as a hexagonal symbol and named.



Chemical Dosing Point

Chemicals are injected for odour control.

Displays a cross within a circle and the chemical symbol. Chemicals are O2, CO2, CL.



Vent Pipe (VP)

Vent Pipes were used for releasing gas pressure. no longer used today.
Shown at the end of a gravity pipe displaying a hexagonal symbol labelled VP.



Pipe Section

Seen as a dotted background to a pipe, this is an internal reference link to more Asset information.



Gauging Station

Gauging Stations are labelled  S Gauging Stn

Flow Control Types:

- Natural
- Open Channel Control
- Pipe Control
- Weir



Notes

Notes are placed pertaining to an area or facility. They may be with or without a boundary.

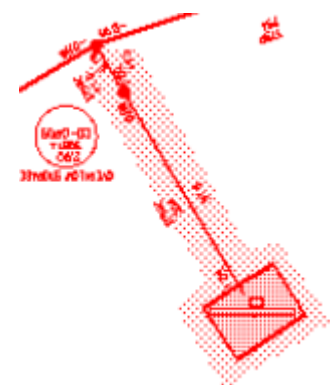


Overflow Storage

Overflow Storage can be a Sump, Tank or Pipes and Manholes.



The complex, which includes the lead in pipes and manholes has a coverage with the Planset and information.



Cathodic Protection

These are linked to metal pipes via wire cables and are used to conduct and monitor electrical flow through pipes to stop erosion.

- Cathodic Groundbeds may also have a circular area of influence shown.
- Groundbed These will affect building applications inside these areas.

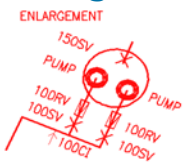
CATHODIC GROUNDBED NO
REFER PERMIT APPLICATIONS TO
MECHANICAL & ELECTRICAL SERVICES

| | | |
|--------------------------------------|-------------|--|
| Cathodic Cable | Type | Magnesium Anode Wire Cable Zinc Anode |
| A- cathodic anode | | Groundbeds are shown indicating a transformer rectifier (TR) with first and last anode indicated on the anode bed. |
| IP- cathodic interference test point | | |
| PP- cathodic polarisation probe | | Polarisation Probes are shown indicated by PP and a number. |
| TP- cathodic test point | | Usually shown with a number |
| TR- cathodic transformer rectifier | | |

WIRE CABLE



Enlargements



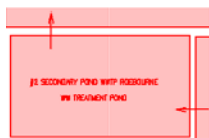
Enlargements are shown when information cannot be represented clearly with standard mapping scales.

Retic Areas



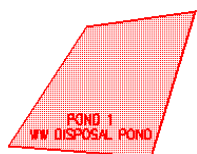
Wastewater areas are named with a boundary and planset number. Proposed area extensions are labelled "Proposed" with a planset number. An area Extension is also indicated.

Wastewater Treatment Pond



Wastewater Treatment Ponds are generally associated with a Wastewater Treatment Plant.

Wastewater Disposal Pond



A Wastewater Disposal Pond is generally associated with a Wastewater Treatment Plant.



Stormwater Syphon

SW
SYPHON

No longer used, but there are still some in the system.



Hatch Box

No longer used, but there are still some in the system.
Used for manipulating flow direction.



Observation Bore and Sample Point

Often found in Waste water treatment Plants



Infill Boundary

Areas of future infill Wastewater.

| | |
|-------------------------|--|
| RES | Not to be seweraged under the infill program at this stage but retained in the system in case things change. |
| UNUSED | Lots that will be seweraged under the infill program. |
| INDU | Industrial areas that are not seweraged under the program but retained as data to be evaluated. |
| COM | Commercial areas that are not seweraged under the program but retained as data to be evaluated. |
| NINF | These are lots greater than 1200m ² in the Metropolitan area and greater than 1500m ² in country areas. They are not considered for sewerage under the infill program. |
| F(date) e.g. F06/07 | These are areas that have been seweraged under the infill program. |
| S(date) e.g. S06/07 | These are areas seweraged by developers and not part of the infill program. |
| Date only e.g. 11/12 | These are areas under the infill program yet to be seweraged. |
| 19 | Sewerage completed prior to 1994 (i.e. prior to the infill program) |



Warning Symbol

Alert - Investigate further!

This symbols will have text below the symbol to indicate the asset or issue.

- Currently in the system are:

| | |
|-------------------|---|
| <u>MANHOLE</u> | Hazardous access chamber (Sewer layer) |
| LADDER | Dangerous ladder (Sewer layer) |
| ELECTRICAL | Location of electrical interference on sections of steel pipe |
| Valve-A | Critical valve – valve state with a code (Water layer) |
| Contaminated Site | Contaminated site (Land layer) |



Wastewater Hotspot

Take care!! Coverage shows where the Water Corporation Assets are within 0.5m of Electrical or Gas underground assets.



| Revisions | |
|-------------|--------------------------------|
| 10 Mar 2009 | Reviewed |
| 18 Mar 2009 | Added Gauging Stations |
| 10 Jul 2009 | Added Overflow Storage |
| 02 Mar 2011 | Reviewed and updated |
| 13 Oct 2011 | Changed Flushing Syphon symbol |
| 18 Feb 2013 | Reviewed |
| 9 Dec 2013 | Reviewed, updated, reformatted |
| 25 Aug 2015 | Reviewed, updated, reformatted |