PROJECT OVERVIEW PLAN

SHEET 2

NOTE:
This plan is for the stormwater investigation by Geoscope. Any other underground utilities might be existing in the area of works and might need further investigation when necessary.

SHEET NO.	PLAN DETAILS
1	Project Overview Plan
2	Plan for 15 Willunga Cres, Forestville
3	Long Section Plan for Stormwater Ø375
4	Geoscope Legend Page

SCALE 1:550 0 5.5 11 16.5 22 27.5 in metres

GEOSCOPE
The Digital Utility Engineering Experts

Geoscope Utility Detection Services Pty Ltd
PO Box 362, Minto, NSW 2566
ABN 70 164 777 208
T: 1300 750 350
M: 0432 296 323
E: info@geoscopelocating.com.au
W: www.geoscopelocating.com.au

ISSUE	DETAILS OF AMENDMENT	BY	DATE
A	STORMWATER INVESTIGATION	SB	06-12-2024

LOCATED BY	JM / JL
SURVEYED BY	NP
DRAFTED BY	SB
CHECKED BY	NP / JM
APPROVED BY	SW
LOCATED DATE	02-12-2024

NOTES
THIS PLAN MUST BE READ IN CONJUNCTION WITH ALL SHEETS FOR ADDITIONAL WARNINGS, NOTES AND LEGENDS.

TRACEABLE SERVICES WERE LOCATED USING ELECTROMAGNETIC AND GPR LOCATING METHODS.

GEOSCOPE ADVISE TO POTHOLE THESE SERVICES TO CONFIRM DEPTHS AND LOCATION FINDINGS PRIOR TO ANY EXCAVATION WORKS.

CLIENT
BOEDEL CONSTRUCTION

DRAWING TITLE	STORMWATER INVESTIGATION
SITE LOCATION	15 WILLUNGA CRES, FORESTVILLE
DRAWING NUMBER	20241206SUI
DRAWING FILE NAME	20241206SUI - 15 WILLUNGA CRES, FORESTVILLE
HEIGHT DATUM	AHD 71
COORDINATE SYSTEM	MGA ZONE 56
SHEET	1 OF 4
	A3

NOTE:
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SCALE 1:200 0 2 4 6 8 10 in metres

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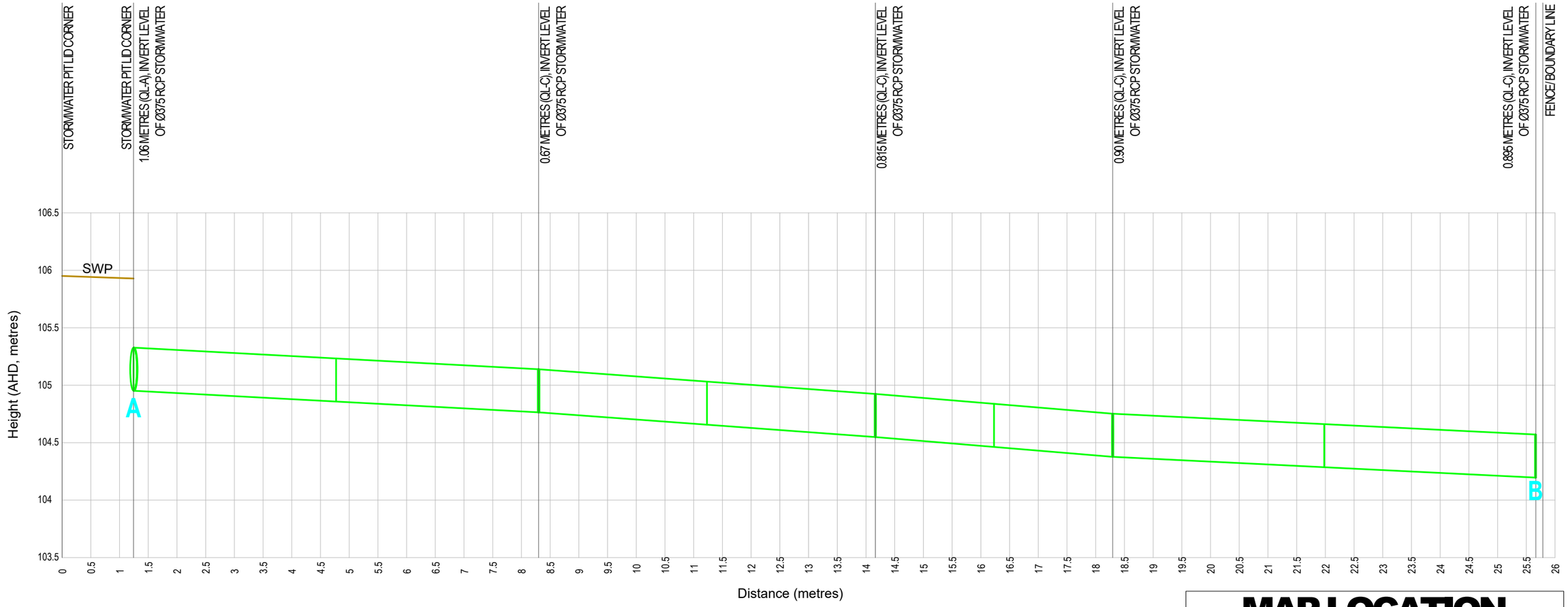
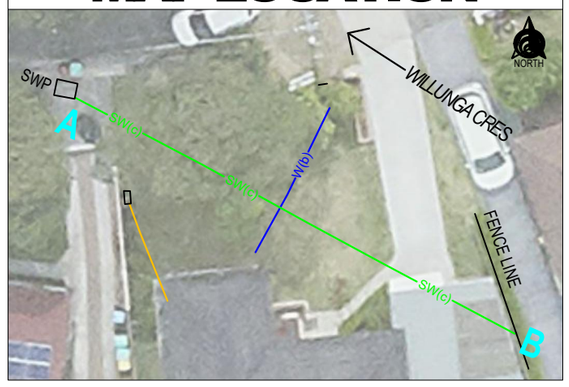
STORMWATER Ø375 - LONG SECTION



NOTES:

1. STORMWATER DEPTHS WERE MEASURED FROM ITS INVERT LEVEL.
2. THESE DEPTHS WERE DETERMINED BY VISUALLY INSPECTING THROUGH THE SW PIT LID OPENINGS, AND ELECTROMAGNETIC LOCATING METHODS FOR THE ALIGNMENT OF THE POSITION OF THE STORMWATER PIPE.
3. THIS PLAN IS FOR THE STORMWATER INVESTIGATION BY GEOSCOPE. ANY OTHER UNDERGROUND UTILITIES MIGHT BE EXISTING IN THE AREA OF WORKS AND MIGHT NEED FURTHER INVESTIGATION WHEN NECESSARY.

MAP LOCATION



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HEIGHT DATUM	COORDINATE SYSTEM	SHEET	
AHD 71	MGA ZONE 56	3 OF 4	A3

Geoscope Legend Page

Utility Services

Communications

TN(a)	Telstra Network - Quality Level A
TN(b)	Telstra Network - Quality Level B
TN(c)	Telstra Network - Quality Level C
TN(d)	Telstra Network - Quality Level D
OU(a)	Optical Underground - Quality Level A
OU(b)	Optical Underground - Quality Level B
OU(c)	Optical Underground - Quality Level C
OU(d)	Optical Underground - Quality Level D
T(a)	Telecommunications - Quality Level A
T(b)	Telecommunications - Quality Level B
T(c)	Telecommunications - Quality Level C
T(d)	Telecommunications - Quality Level D
OF(a)	Non - Telstra Optical Fibre - Quality Level A
OF(b)	Non - Telstra Optical Fibre - Quality Level B
OF(c)	Non - Telstra Optical Fibre - Quality Level C
OF(d)	Non - Telstra Optical Fibre - Quality Level D

Electricity

EU(a)	Electricity Underground - Quality Level A
EU(b)	Electricity Underground - Quality Level B
EU(c)	Electricity Underground - Quality Level C
EU(d)	Electricity Underground - Quality Level D
LV(a)	Electricity Low Voltage - Quality Level A
LV(b)	Electricity Low Voltage - Quality Level B
LV(c)	Electricity Low Voltage - Quality Level C
LV(d)	Electricity Low Voltage - Quality Level D
HV(a)	Electricity High Voltage - Quality Level A
HV(b)	Electricity High Voltage - Quality Level B
HV(c)	Electricity High Voltage - Quality Level C
HV(d)	Electricity High Voltage - Quality Level D

Water

W(a)	Water - Quality Level A
W(b)	Water - Quality Level B
W(c)	Water - Quality Level C
W(d)	Water - Quality Level D
WM(a)	Water Main - Quality Level A
WM(b)	Water Main - Quality Level B
WM(c)	Water Main - Quality Level C
WM(d)	Water Main - Quality Level D
WS(a)	Water Service - Quality Level A
WS(b)	Water Service - Quality Level B
WS(c)	Water Service - Quality Level C
WS(d)	Water Service - Quality Level D
RW(a)	Recycled Water - Quality Level A
RW(b)	Recycled Water - Quality Level B
RW(c)	Recycled Water - Quality Level C
RW(d)	Recycled Water - Quality Level D
FH(a)	Fire Hydrant - Quality Level A
FH(b)	Fire Hydrant - Quality Level B
FH(c)	Fire Hydrant - Quality Level C
FH(d)	Fire Hydrant - Quality Level D
FS(a)	Fire Service - Quality Level A
FS(b)	Fire Service - Quality Level B
FS(c)	Fire Service - Quality Level C
FS(d)	Fire Service - Quality Level D

Sewer

SM(a)	Sewer Main - Quality Level A
SM(b)	Sewer Main - Quality Level B
SM(c)	Sewer Main - Quality Level C
SM(d)	Sewer Main - Quality Level D
S(a)	Sewer - Quality Level A
S(b)	Sewer - Quality Level B
S(c)	Sewer - Quality Level C
S(d)	Sewer - Quality Level D

Gas

GM(a)	Gas Main - Quality Level A
GM(b)	Gas Main - Quality Level B
GM(c)	Gas Main - Quality Level C
GM(d)	Gas Main - Quality Level D
GS(a)	Gas Service - Quality Level A
GS(b)	Gas Service - Quality Level B
GS(c)	Gas Service - Quality Level C
GS(d)	Gas Service - Quality Level D
HG(a)	High Pressure Gas Main - Quality Level A
HG(b)	High Pressure Gas Main - Quality Level B
HG(c)	High Pressure Gas Main - Quality Level C
HG(d)	High Pressure Gas Main - Quality Level D

Traffic Signals (TfNSW/ RMS)

TS(a)	TfNSW/ RMS Traffic Signals - Quality Level A
TS(b)	TfNSW/ RMS Traffic Signals - Quality Level B
TS(c)	TfNSW/ RMS Traffic Signals - Quality Level C
TS(d)	TfNSW/ RMS Traffic Signals - Quality Level D

Stormwater

SW(a)	Stormwater - Quality Level A
SW(b)	Stormwater - Quality Level B
SW(c)	Stormwater - Quality Level C
SW(d)	Stormwater - Quality Level D

Unknown

?P(a)	Unidentified Pipe - Quality Level A
?P(b)	Unidentified Pipe - Quality Level B
?P(c)	Unidentified Pipe - Quality Level C
?P(d)	Unidentified Pipe - Quality Level D
?R(a)	Unknown GPR - Quality Level A
?R(b)	Unknown GPR - Quality Level B
?R(c)	Unknown GPR - Quality Level C
?R(d)	Unknown GPR - Quality Level D

Utility Investigation Terminologies and Abbreviations

Survey Justifications

IL	Invert Level
OL	Obvert Level
TOP	Top of Pipe

Utility Investigation Limitations

EOT	End of Trace
FOD	Full of Debris/ Full of Dirt
FOW	Full of Water
NS	No Signal
UTL	Unable to Locate
UTO	Unable to Open
UTT	Unable to Trace

Utility/ Site Features

AV	Air Valve
BH	Bore Hole
CV	Check Valve
DP	Down Pipe
EJ	Elevated Joint
FH	Fire Hydrant
GM	Gas Marker
GV	Gas Valve
HYD	Hydrant
IO	Inspection Opening
LP	Light Pole/ Post
MS	Maintenance Shaft
PH	Pothole
PP	Power Pole/ Post
ST	Silt Trench
SV	Slop Valve
TL	Traffic Light
UGOH	Underground to Overhead Service
VP	Vent Pipe
VS	Vent Shaft
WM	Water Meter
WT	Water Tap
WV	Water Valve

Pits and Manholes

EMH	Electricity Manhole
EP	Electricity Pit
SMH	Sewer Manhole
SWMH	Stormwater Manhole
SWP	Stormwater Pit
TMH	Telstra Manhole/ Telstra Mains Pit
TP	Telstra Pit

Utility Surveying Terminologies

ø	Pipe Diameter
AHD	Australian Height Datum
BYDA	Before You Dig Australia
DB	Direct Buried
EM	Electromagnetic Detection
GPR	Ground Penetrating Radar
HV	High Voltage
LV	Low Voltage
MGA	Map Grid of Australia
PM	Permanent Mark
RL	Reduced Level
SSM	State Survey Mark
SW	Stormwater

Pipe Material

AC	Asbestos Cement
CI/ CICL	Cast Iron/ Cast Iron Cement Lined
CONC	Concrete
DI/ DICL	Ductile Iron/ Ductile Iron Cement Lined
EW	Earthenware
FC	Ferro Cement
FIBG	Fibreglass
GI	Galvanised Iron
GRP	Glass Reinforced Plastics
HDPE	High Density Polyethylene
HD PVC	High Density Polyvinylchloride
MS/ MSCL	Mild Steel/ Mild Steel Cement Lined
NB GI	Nominal Bore Galvanised Iron
NY	Nylon
PE	Polyethylene
PVC	Polyvinylchloride
oPVC	Polyvinylchloride - Oriented
uPVC	Polyvinylchloride - Unplasticised
RC	Reinforced Concrete
SCL	Steel Cement (Mortar) Lined
SCL IBL	Steel Cement Lined Internal Bitumen Lined
SGW	Salt Glazed Ware
ST	Steel
VC	Vitrified Clay
WI	Wrought Iron

Utility Investigation Plan Texts and Lines

Ø.80A — Depth of the Underground Service (declared in metres) The depth is 800 mm and the quality level is A.

0.50B EU(b) 0.60B — (Example) Electrical service located by quality level B with depth indicated between 500 mm to 600 mm below the surface from electromagnetic locating trace.

D SW(d) D — (Example) Stormwater drawn as quality level D with no depth indication as it was unable to be traced.

SCOPE OF WORKS — Scope of Works for the Subsurface Utility Investigation

Australian Standard (AS5488) - Classification of Subsurface Utility Information (SUI Classification)

Subsurface Utility Information (SUI) classification from Australian Standard (AS 5488.2-2022) allows the user of this plan to fully understand the gathered information including the determined quality levels. The quality levels (QL-A, QL-B, QL-C, QL-D) refer to the accuracy of each information collected on subsurface utilities on this plan. With these quality levels, project risks related to underground utilities can be properly managed. Below is the description of each quality level with Quality Level A (QL-A) as the highest of all the quality levels. Higher quality level corresponds to more accurate information on subsurface utilities.

QUALITY LEVEL A

Quality Level A (QL-A) is the highest quality level of accuracy with an absolute location in three dimensions (x, y, z coordinates). This confirms the pipe details such as its size/ diameter, material, and condition.

Maximum Tolerance for Surface Features:
Horizontal Tolerance: ±50 mm
Vertical Tolerance: ±50 mm

Locating Methods:
- Non-Destructive Excavation (Potholing/ Slit Trenching)
- Physically and positively identified utilities (i.e., from pit lid/ cover openings)
- Ground Evidence/ Exposed pipes and/ or cables

Vertical/ Depth Information:
- Non-Destructive Excavation (Potholing/ Slit Trenching): Top of pipe unless restricted (e.g., concrete encased, bricks, any coverings, etc.)
- Physically and positively identified utilities: Top of pipe unless stated invert or obvert measurement.

Limitation:
- For utilities with concrete encasements, brick covers, or protective hard covers (i.e., electrical assets) which there is a limited access for the utility assets.

QUALITY LEVEL B

Quality Level B (QL-B) is the most common form of utility locating which provides a relative subsurface location in three dimensions (x, y, z coordinates).

Maximum Tolerance for Surface Features:
Minimum requirement: Relative Spatial Position
Horizontal Tolerance: ±300 mm
Vertical Tolerance: ±500 mm

Locating Methods:
- Electronically locating and tracing services from pits, valves, or QL-A
- Copper or metallic cable or wire materials which is inside of a conduit
- Utility depth for cast iron or steel pipe materials is from centre of pipe
- Electromagnetic Pipe and Cable Locators
- Sondes or flexi trace
- Acoustic Pulse Equipment

Limitations:
- Indication of existence of subsurface utilities and does not validate the absolute location and attribute information.
- Electronic detection is not recommended for obtaining accurate depth information due to interference from other adjacent services and/ or geological conditions.
- Not entirely accurate due to differing electromagnetic fields, soil conditions, and multiple banks of cables affecting the locating signal.

QUALITY LEVEL C

Quality Level C (QL-C) is the correlation of surface features and/ or identification of approximate position and attributes of the services with the help of existing records and/ or anecdotal evidence.

Maximum Tolerance for Surface Features:
Minimum requirement: Relative Spatial Position
Horizontal Tolerance: ±300 mm

Locating Methods:
- Identification from visible utility surface features (e.g., pits, poles, marker plates, hydrants, valves, etc.)
- Drawing a string of approximate position of services from the acquired Before You Dig Australia (BYDA) plans
- Able to detect unidentified entities or services
- Ground Penetrating Radar
- Stringline from Pits
- Electromagnetic Detection from Induction/ Two-man Induction Sweep
- Electromagnetic Detection from Passive Scanning

Limitations:
- Does not show multiple banks of cables
- No three-dimensional information
- No pipe information for unidentified entities or services

QUALITY LEVEL D

Quality Level D (QL-D) is the lowest and the most basic level of all the quality levels as per the Australian Standard 5488 (AS5488).

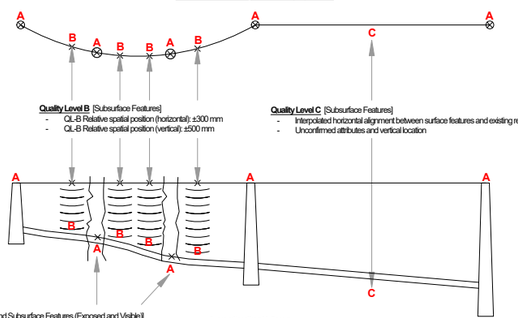
Limitations:
- Information is only based on acquired Before You Dig Australia (BYDA) plans and other engineering and design plans
- Drawing of lines by measuring from boundary offsets indicated on the plans
- Simple approximation from site records and anecdotal evidence
- Utility services which were not located using Electromagnetic Detection and Ground Penetrating Radar methods

SUI Quality Level Confidence Illustration

Utility Positioning Classification

Varying Quality Levels
Adaptation from AS 5488

Plan View: Quality Levels A, B, and C

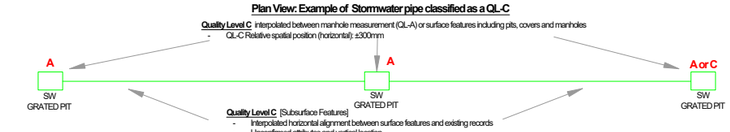


Longitudinal View: Quality Levels A, B, and C

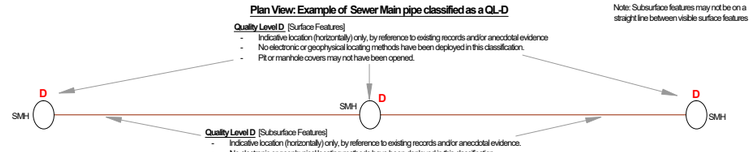
Note: Subsurface features may not be on a straight line between visible surface features

Illustrations for Subsurface Utility Investigations

Plan View: Example of Stormwater pipe classified as a QL-C

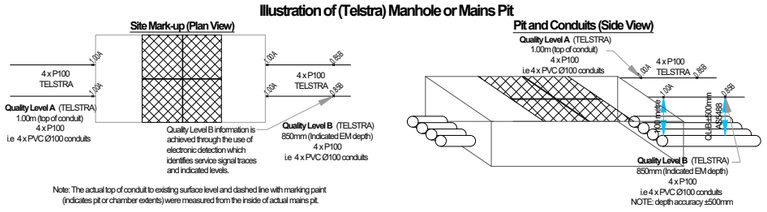


Plan View: Example of Sewer Main pipe classified as a QL-D



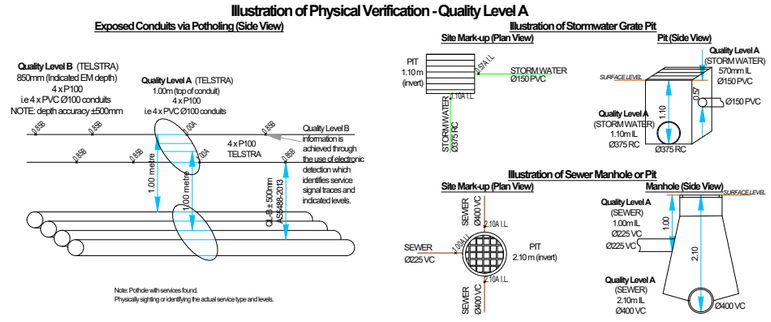
Note: Subsurface features may not be on a straight line between visible surface features

Illustration of (Telstra) Manhole or Mains Pit



Note: The actual top of conduit to existing surface level and dashed line with marking paint (indicates pit or chamber extents) were measured from the inside of actual mains pit.

Illustration of Physical Verification - Quality Level A



Note: Pothole with services found. Physically sighting or identifying the actual service type and levels.

Disclaimer

Geoscope have marked utilities within the area specified by the client. All the utilities have been referenced to the asset owners' diagrams; however, all utilities may not have been shown due to its limitations during the utility investigation. Utility lines were interpolated between points that were gathered on site by utility detection methods and marked based on the Australian Standard of utility classification. Utility descriptions were labelled from measured visible services originating from quality level A (QL-A) points and/ or from diagrammatic records.

QL-A pipe and conduit diameters indicated have been measured as accurately as possible from the top of the pipe in an open pit or manhole. Some pipe work may have slight variance in diameter due to the ability to measure under pit lids or erosion and/or formed or shaped bell-mouths larger than the actual inside diameter. In this case, further investigation may be necessary.

Only manhole confirmation and potholed or trenched service areas are QL-A. All other areas are interpolated between QL-B points using a variety of locating methods including Electromagnetic detection (EM) and Ground Penetrating Radar (GPR).

Electronic detection must not be solely used to determine location for construction purposes. The electronic (indicative) subsurface measurements must be confirmed by physically sighting the asset. Electromagnetic locating will detect almost all buried conductors, but there are some objects that do not radiate any detectable signal.

Exposing underground structures by potholing using hand-held tools or non-destructive excavation methods to determine the precise location and extent of structures before any mechanical means of excavation is recommended.

Sewer lines are shown as QL-C and/ or QL-D information only drawn from manhole and pit investigations using flexi-rod and drain dye methods are recommended to take further investigations.

This plan is for design purposes only. It does not replace the plans provided by the utility asset owners in the designated work area through the Before You Dig Australia (BYDA) plans. Contractors are reminded of their own "duty of care" and should conduct their own Before You Dig Australia (BYDA) prior to excavation or construction.

This plan does not give approval to dig. Permits and approvals must be obtained from the relevant authorities. Furthermore, this plan must be printed in colour as failure to do so will invalidate the information shown on this plan.

BEFORE YOU DIG www.byda.com.au

NULCA AUSTRALIA

CERTIFIED LOCATOR www.dbydlocator.com

BESTPRACTICE CERTIFICATION ISO 9001 QUALITY · ISO 14001 ENVIRONMENT · ISO 45001 OH&S

JAS-ANZ

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