



Major Projects

Underground Service Location Procedure

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Revision 2

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0	07 Mar 2023	Neil Stanesby	Issued for use
1	11 Apr 2023	Nigel Eberhardt	Vertical datum and drafting requirements added
2	09/04/2024	Neil Stanesby	Updated to new MP document number referenced BYDA rather than DBYD.

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1 INTRODUCTION

1.1 Purpose

This procedure establishes the requirements of all work related to the location of underground services data to facilitate Tasmanian Ports Corporation (TasPorts) needs.

1.2 References

The following documents relate to this procedure:

- Australian Standard *AS 5488.1:2019* Classification of subsurface utility information Part 1: Subsurface utility information
- Australian Standard *AS 1742.3:2019* Manual of uniform traffic control devices Part 3: Traffic control for works on roads
- Safe Work Australia *Confined Space Code of Practice* as currently approved in Tasmania
- TasPorts – Traffic Management Specification

1.3 Definitions

Confined Space - means an enclosed or partially enclosed space that:

- is not designed or intended to be occupied by a person
- is, or is designed or intended to be, at normal atmospheric pressure while any person is in the space; and
- is or is likely to be a risk to health and safety from:
 - ◆ an atmosphere that does not have a safe oxygen level, or
 - ◆ contaminants, including airborne gases, vapours and dusts, that may cause injury from fire or explosion, or
 - ◆ harmful concentrations of any airborne contaminants, or
 - ◆ engulfment.

A confined space is determined by the hazards associated with a set of specific circumstances and not just because work is performed in a small space. Entry into a confined space means a person's head or upper body is in the confined space or within the boundary of the confined space.

Before You Dig Australia – (formerly Dial Before You Dig) is a free referral service for information on underground pipes and cables. refer to website www.byda.com.au.

GPR – Ground Penetrating Radar.

Surveyor – the survey party leader responsible for engaging the underground service locator (USL) and for measuring the marked locations.

USR – Underground Services Report.

USL – Underground Service Locator.

1.4 Traffic Management

The USL is responsible for identifying underground services across the nominated site to facilitate a safe environment for both worker and port users when working on or near a port. The USL must comply

with the [WorkSafe Tasmania](#) traffic management requirements, Australian Standard *AS 1742.3 Traffic Control for Work on Roads*, TasPorts Traffic Management Specification and TasPort site and port rules.

1.5 Uncovering Services

Services shall only be potholed with the agreement of TasPorts. Any services uncovered shall be by a recognised licensed body that is qualified to uncover buried services (i.e. by potholing or hydrojet/vacuumjet). The integrity of the service and the safety of the workers and port users shall be maintained at all times.

1.6 Entering Confined Spaces

Confined spaces such as, but not limited to, manholes, tunnels pits, underground areas or similar shall be undertaken under a safe system of work in alignment with the Safe Work Australia *Confined Space Code of Practice*.

Entry in a confined space will only be undertaken by trained and competent personnel under a confined space entry permit and risk assessment administration system.

2 PROCEDURE

The following procedure steps will be undertaken in addition to the required TasPorts port entry, site rules permission, hazards controls including permit to work requirements.

2.1 Prior to Work Commencement

The USL is to be supplied all relevant service information, so far as is reasonably practicable, from TasPorts or the engaged surveyor prior to commencement of work.

2.2 Classification of Service Quality Classes

The USL shall classify the located underground services to allow the end user to place an appropriate reliance on the data and label the underground services information by the following quality classes on the BYDA plans as a part of the report.

2.2.1 Direct Services Location

Direct Service location is the highest accuracy order of service location. It refers to services which are openly visible and can be surveyed by direct measurement to the object.

Examples include, exposed pipes, open cable trenches and exposed drainage where invert/obvert measurement is possible.

2.2.2 Active Services Location

Active Services are to be located using methods whereby services are traced using an electromagnetic signal emitted from the transmitter and received by the service detection device.

Examples of active service location methods include direct connection or induction clamp. Readings are required to be marked on the ground surface.

Active service location methods are suitable for metal conduits, cables that are welded, soldered or braided together or where a tracing wire/cathodic protection is present. This method is mandatory for port services.

2.2.3 Passive Services Location

Passive Services Location uses passive methods which do not involve the use of an electromagnetic signal, transponders or sondes. In this class the service detection device is used as a standalone.

Examples of Passive Service Location capture include radiolocation or GPR. These methods are commonly used for materials such as cast iron or steel pipes where active induction is not possible. Readings are required to be marked on the ground surface.

2.2.4 Unverified Services Location

Unverified Services are services that have been located without confirmation by any of the above-mentioned methods. Unverified Services can include service locations approximated from BYDA plans, unidentified GPR or by joining topstones. The resulting services will be determined as unverified services.

Unverified location methods are commonly used for materials such as plastic poly tubing, clay, concrete or uninsulated/rubber jointed cast iron pipes where other methods are not possible.

Unverified services shall be marked on the ground and are required to be highlighted on the marked up BYDA plans provided to the surveyors as detailed in item 2.4 below.

2.3 Underground Services Report (USR)

At the completion of the service location, the USL shall submit the following information to the surveyor for inclusion in the final deliverable to TasPorts:

- Completed Underground Services Checklists (Appendix B) with any relevant comments particularly services that were not able to be located.
- Marked up BYDA plans depicting services and Quality Class.
- Marked up copies of any supplementary plans or sketches of services not captured by BYDA search.
- A statement of the hours worked.

2.4 Detail Survey

All survey drawings prepared by a third party shall be in digital format. TasPorts nominated software company is Autodesk.

Acceptable Autodesk formats are:

- AutoCAD Drawing (.dwg)
- AutoCAD DXF (.dxf)
- Autodesk Recap (.rcp)

In addition to the above, a portable document format (.pdf) file must be provided. All .pdf files are to convey the purpose of the initial survey request, identify datum conversion i.e. CD to AHD, be legible when printed at A3 and presented within the confines of the drawing title block.

Data is to be to the following requirements and any nominated project specific requirements, with a minimum of two local survey control marks supplied with all data:

- Orientation: Map Grid of Australia 2020 (MGA2020) zone 55
- Distances: Planar
- Heights: Chart Datum (Lowest Astronomical Tide), as set out in table in Appendix D
- Coordinate origin: MGA zone 55 coordinate, derived from the relevant State Permanent Mark (SPM), as set out in table in Appendix C:

All items within the data set are to be identifiable - by layer and presented in accordance with 6A0000-TASP-0020-SER-DET-001: Drafting Standards: Utilities Linetypes – refer Appendix E.

A native copy of this file will be provided by TasPorts.

3 GROUND MARKING REQUIREMENTS

General requirements are as follows:

- Paint markings shall be at less than 20m intervals on linear runs and at all changes in direction for all services.
- Indicative depths (if requested) shall be painted at less than 50m intervals and at all changes in depth for all services.

3.1 Services information

Service information shall be marked at start and finish of the service run and less than 100m intervals and include:

- Services ownership e.g. Telstra, Optus, TasPorts TasWater, TasNetworks
- Cable type and size e.g. Optic fibre, High Voltage, Main Cable, Communication cable or Signal Feed cable.
- Pipe construction type and size shall be provided where information is available (i.e. RCP 450mm means reinforced concrete pipe of 450mm diameter) at start of run.
- Additional information regarding assets (i.e. HPGM high pressure gas main, pump means pumping mains and GRAV means gravity mains) shall be annotated.

3.2 Service marking and abbreviations

1. Services shall be colour marked, refer to Appendix A – Colour Allocation List.
2. Ensure all markings are discrete and not outsized.
3. Ensure buildings and property are not damaged by paint markings.

4 Appendix A – Colour Allocation List

Asset Type	Colour	Primary Code
Communications	White	-C-
Drainage (Stormwater/Raw)	Green	-D-
Electricity	Orange	-E- (HV & LV)
Fire Service	Red	-F-
Gas	Yellow	-G-
Petroleum	Brown	-P-
Recycled Water	Purple	-R-
Sewer	Cream	-S-
Unidentified	Pink	-U-
Water (potable)	Blue	-W-

5 Appendix B – Underground Services Checklist

To be completed by the underground service locator and handed to the surveyor

USL name: _____ Signature: _____ Date: _____

Project Description (Port): _____

Task Description	Compliance	Details of non-compliance (Attach separate statement if insufficient space)
Work Health and Safety, TasPorts controls		
BYDA/utility information received from surveyor		
Traffic Management		
Traffic Management invoice (if sub-contracted)		
Services marked on ground as per requirements		
Indicative depths provided (if requested)		
Drainage inverts provided / measured		
USR- Marked up service plans for Quality Classes		
Different services in common trench located separately		
Services located not shown on BYDA/ Utility plans;		
▪		
▪		
▪		
▪		
▪		
Services not located / unable to be found;		
▪		
▪		
▪		
▪		
▪		
Utility / Asset owner locator required to discover service:		
▪		
▪		
▪		
▪		
▪		
Marked up Utility plans submitted to the Surveyor		
Hours worked detailed on invoice to the Surveyor		

6 Appendix C – State Permanent Mark (SPM)

Location	SPM
Burnie	SPM9089
Devonport	SPM11461
Devonport Airport	SPM10866
Bell Bay (incl. Longreach)	SPM9969
Hobart	ST18
Strahan	ST1116
Stanley	SPM9456
Inspection Head	SPM10053
Flinders Island	ST1167
King Island – Grassy	ST1168
King Island – Currie	ST1118

7 Appendix D – Vertical Datum

Location	CD below AHD (m)
Burnie	1.938
Devonport	1.975
Bell Bay	1.997
Hobart	0.830
King Island - Grassy	<i>TBA</i>
King Island - Currie	<i>TBA</i>
Flinders Island - Lady Barron	<i>TBA</i>
Flinders Island - White Mark	<i>TBA</i>
Strahan	<i>TBA</i>
Stanley	<i>TBA</i>

8 Appendix E – Drafting Standards; Utilities Linetypes

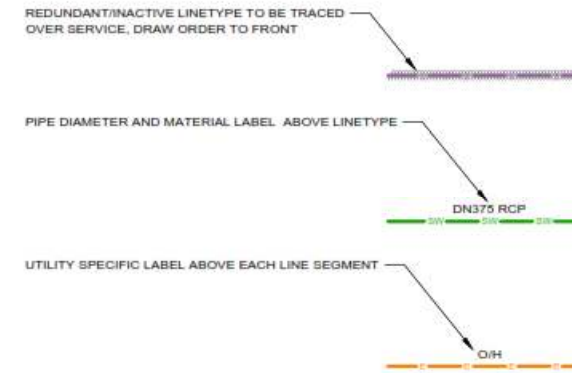
UTILITIES LINETYPE LEGEND

	TASPORTS PROPERTY BOUNDARY
	REDUNDANT/ INACTIVE SERVICE
	ELECTRICAL - UNCLASSIFIED
	ELECTRICAL - LOW VOLTAGE
	ELECTRICAL - HIGH VOLTAGE
	STORMWATER
	SUB-SOIL DRAIN
	OPEN DRAIN
	POTABLE WATER
	FIREWATER
	SEWER
	SEWER RISING MAIN (DIRECTION OF FLOW UNKNOWN)
	SEWER RISING MAIN 'M' INDICATES DIRECTION OF FLOW
	TELECOMMUNICATIONS
	FIBRE OPTIC
	GAS
	OIL

EXISTING UTILITIES LINETYPE LEGEND*

	ELECTRICAL - UNCLASSIFIED
	ELECTRICAL - LOW VOLTAGE
	ELECTRICAL - HIGH VOLTAGE
	STORMWATER
	SUB-SOIL DRAIN
	OPEN DRAIN
	POTABLE WATER
	FIREWATER
	SEWER
	SEWER RISING MAIN (DIRECTION OF FLOW UNKNOWN)
	SEWER RISING MAIN 'M' INDICATES DIRECTION OF FLOW
	TELECOMMUNICATIONS
	FIBRE OPTIC
	GAS
	OIL

* EXISTING UTILITIES LINETYPE LEGEND IS ONLY APPLICABLE WHERE DOCUMENTATION SHOWS PROPOSED SERVICES IN ADDITION WITH EXISTING.



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