

DO NOT work around any services overhead or underground until you have positively identified them and implemented protection measures.

PERSONAL PROTECTIVE EQUIPMENT

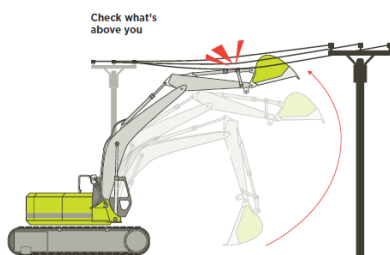
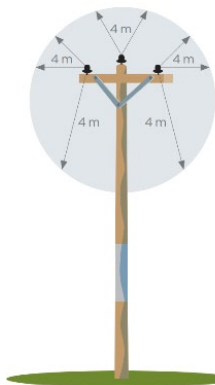


GOLDEN RULES – Do's

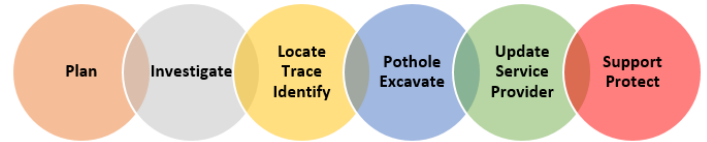
- ✓ Always obtain service plans, never excavate without service plans on-site and a mark out being completed.
- ✓ Always complete a risk assessment before work starts (part of daily toolbox).
- ✓ Always have a good look around for signs of services.
- ✓ Always wand area with locator for power and telecommunications. Use power and radio settings and Genny if required.
- ✓ Ensure appropriate PPE is used / worn.
- ✓ If you're not sure or need some help just ask!
- ✓ Treat all services as live until proven otherwise.
- ✓ Caution to be taken around cast iron, steel or earthenware pipes, especially if your plans show a PE pipe to be in the area. Ask yourself could there be a PE pipe inside this pipe?

OVERHEAD SERVICES

- ✓ Complete a risk assessment to identify all services in the area, check service plans and have a good look around.
- ✓ Obtain / ensure you have a close approach permit if you are working within **4 metres of any overhead services 5 metres for poles.**
- ✓ Ensure all operators are competent in the operation of their machines, that they are briefed and understand the dangers.
- ✓ Ensure that a competent spotter is present at all times during the work, is briefed and understands the dangers.
- ✓ Ensure the spotter is alert and is able to maintain effective communication with the operators, that they are able to alert / stop the operator or any other worker if they are or any part of machinery is about to enter the safety zone.
- ✓ Operators and spotters should work together, however the operator must obey the directions given by the spotter. If unsure or not happy with any directions the operator should stop and then discuss with the spotter.



UNDERGROUND SERVICES



PLAN

- ✓ Obtain service plans, mark outs and any required stand overs or permits. Including Client Permits.

INVESTIGATE

Check Service plans, check mark-outs, have a good look around. Look for signs of services.

- ✓ Signs of old trenches, asphalt, saw cuts, depressions, grass strike.
- ✓ Existing Tobies / valves, meters (gas / water).
- ✓ Access chambers.
- ✓ Cables coming down poles.
- ✓ Resident / property owner information.

LOCATE / TRACE / IDENTIFY

- ✓ Use locator wand over area looking for power and telecommunications. **(BEWARE if no power is picked up this doesn't mean there are no power cables present).**
- ✓ Use a locator in conjunction with Genny to induct a signal into the service where possible.
- ✓ Investigate drains – locate, CCTV, access lids etc.
- ✓ If unsure ask your Team Leader / Project Manager.
- ✓ Know the mark-outs, ducting colours and surface marking symbols:



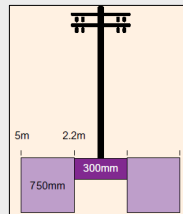
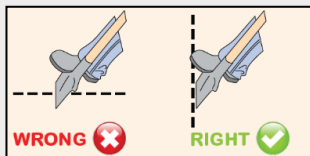
SERVICE	DUCT COLOUR	SURFACE MARKING COLOUR	SURFACE MARKING SYMBOLS	COLOURS USED IN THE PAST
Electricity	Orange	Orange	E	Steel, galvanised pipe, asbestos, off-white fibre, off-white concrete, earthenware (ceramic), cast iron, white, grey, brown, multicoloured
Gas	Yellow Black/Yellow Stripe	Yellow	G	Steel, galvanised pipe, cast iron, red, grey, orange
Telecomms	Green Light Blue Purple Salmon	Purple	T CHOR V/COM	Grey, blue, red
Water	Blue, white	Blue	W	Grey, asbestos, galvanised pipe black with red stripe, white, 'any'
Wastewater/ Sewer	Light Grey	Red	SS	Cast iron, orange, red, 'any'
Stormwater	Dark Grey	Pink	SW	Cast iron, green, 'any'

POTHOLE / EXCAVATE

- ✓ Double check drawings / plans. Position pothole in line with excavation where practical.
- ✓ Check pipe material / diameter / amount (BEWARE OF SLEEVED PIPES).
- ✓ Excavate a known service and trace back to main (to confirm).
- ✓ Tap mains (listen).
- ✓ If unsure ask your Team Leader / Project Manager.
- ✓ Contact service provider.
- ✓ Update the pothole checklist for all sites that have a quality plan.
- ✓ As a guide use the **2 metre rule** for cables and pipelines until you have positively identified the service – refer to the service plans for hand and machine digging requirements.
- ✓ Know your minimum approach distances (MADS) as a guide:

Service	Distance Away
Cables, gas transmission or high pressure pipelines	2m or more
Overhead power line	4m or more
Pole or support stay	5m or more
Tower	12m or more

- ✓ Work safely and carefully around all underground utility services, hand digging or hydro vacuum must continue until all of the services have been found.
- ✓ Make sure you dig with your shovel **in-line** with the corridor marks at all times. If possible, use non-conductive tools. If you excavate in these areas of a pole you need to obtain a close approach.



STANDOVERS

- ✓ A utility operator may want to watch you working, whether digging or backfilling, if you are close to an important pipe or cable. They will want to ensure that no damage is caused to their utility service during works and that you use the correct methods, tools, materials and techniques. Refer to the service plans for hand digging distances and standover requirements.
- ✓ Arrange directly with the service provider, allow them to observe your work (digging or backfilling) and follow any of their requests.
- ✓ Stop work if the standover person requests it, while they check their utility, and help plan the next steps if they feel there is a risk of damage.
- ✓ Ensure you give the required notice to the utility operator when working around important pipes and cables, in case they may have to isolate the utility service (and this means a shutdown for consumers).

STRATEGIC PIPELINE
Standover may be required
At least 2 working days notice required prior to excavation

UPDATE SERVICE PROVIDER – if plans are incorrect

- ✓ Make a sketch, take photos and include measurements from property boundaries. Ensure it is also captured in the as-builts.

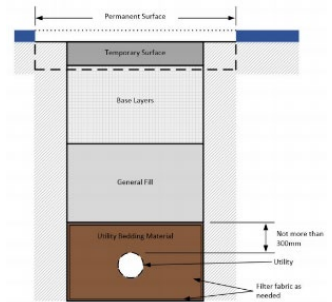
- ✓ Inform relevant service providers of any updates required, you can contact the provider directly or ask someone in the office to follow this up for you.

SUPPORT / PROTECT

- ✓ Always excavate carefully around services, never lever or stand on services.
- ✓ Use bridges across trenches / excavations to support services
- ✓ Protect exposed services – this will be determined by a risk assessment that will include the depth of the excavation and the zone of influence, soil strength and density.

BACKFILLING AROUND SERVICES

- ✓ Caution is to be taken when backfilling around exposed services, the bedding material should be lowered carefully and positioned around the utility ensuring it is not damage or any movement occurs.
- ✓ Refer to the construction plans, contract specifications, the National COP for Utility Operator' Access to Transport Corridors and any local conditions as per the WAP to identify the required pipe bedding, surround, backfill materials and compaction requirements.
- ✓ When backfilling lay warning tape above service and connect trace wires were applicable – think of the next contractor!



USEFUL NOTES

- Beware of sleeved pipes, a drawing may say a pipe is PE but it's actually been inserted into an old cast iron pipe.
- Beware of similar sized mains.
- Know and understand your site emergency procedures and report all damages immediately.

REFERENCE MATERIAL – for more information:

- All documents can be located in the CCL Library: <P:\- CCL LIBRARY\Utility Providers Information> and/or www.worksafe.govt.nz
- NZ Utilities Advisory Group: 'Your Guide to Working on the Road and Staying Alive' <http://nzug.org.nz/wp-content/uploads/2018/03/NZUAG-Handbook.pdf>
- Guide for Safety with Underground Services
- New Zealand Electrical Code of Practice for Electrical Safe Distances (NZECP 34:2001)
- WE – Excavation and Construction Safety Zones & WE -Vacuum Excavation in the Vicinity of the Wellington Electricity Network
- The National COP for Utility Operators' Access to Transport Corridors
- SOP 52 Services –Overhead and Underground

DON'T

- ✗ Rely on service plans and mark-outs alone, they are a guide only. This includes the depth of the service.
- ✗ Presume that all cast iron or steel pipes are watermain or redundant services.

This Quick Reference Guide does not necessarily cover all possible hazards associated with this task and should be used in conjunction with other references and available CCL SOP's. It is designed as a guide to be used to compliment training and as a reminder to users prior to use.