



# SOP-101 Underground Services Identification Procedure

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## 1 PURPOSE

To ensure underground services are identified, detected and exposed prior to drilling operations commencing within close proximity to any potential underground services.

Operational Drilling employees are provided with basic instruction in the standard processes for underground services including awareness of any hazards and associated procedures required to reduce risk.

## 2 SCOPE

This procedure applies to all DCN Drilling operations, sites, rigs and operational drill staff. DCN Drilling Clients are to be made aware of this procedure as part of contractual agreements and agree to comply with safe management of underground service.

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## 3 REQUIREMENTS

The following requirements are standard procedures that are consistent across the various drill rigs and sites, site specific procedures, rules, JHA's, risk assessments and safe work practices are to be considered based on the type of drilling and/or the site location specific hazards.

### 3.1 COMPETENCY REQUIRED

- Drilling operations competency
- Appropriate vehicle license
- DCN Drilling Induction
- Site Safe Induction Card
- Site Specific Induction if required

### 3.2 PERMITS REQUIRED

Specific permits may be required to be issued by the underground service provider when drilling is planned within close proximity to their services. Appendix 1 details service provider's requirements for notification and permitting for close proximity works, these may include:

- High pressure gas permit/approval
- Water lines permit/approval
- Sewer and storm water lines permit/approval
- Telecommunication lines permit/approval
- Electrical sources
- Fiber Optics permit/approval
- Site specific permit requirements

### 3.3 UNDERGROUND SERVICE LOCATOR APPROVALS

A competent Underground Service Locator (USL) is appointed externally or internally to identify and detect underground services. A USL Plan is provided following the site assessment and the identified services are marked up on the ground using the standard marking practices for services. The USL Plan includes the following details:

- Type, location and depth of services detected

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- Equipment used to detect services electromagnetic, ground penetrating radar
- Details of relevant suppliers service plans or gas obstruction plans (to remain on site)
- Any additional permits required

DCN Drilling generally use Underground Service Locator – Nick Mepsted Mob. 0274547699

<http://www.undergroundlocators.co.nz/>

### 3.4 EQUIPMENT REQUIRED

- Equipment required and serviceable as per site and job specific requirements
- Cat Scan
- Service plans from provider
- Vacuum unit to 20% bigger than largest drill rod/string and/or casing.

### 3.5 STANDARD PPE REQUIRED

- Safety Glasses
- Safety Boots
- Safety Helmet
- Hi Vis clothing
- Protective gloves, where required

### 3.6 ADDITIONAL PPE REQUIRED

- Fall prevention harness and lanyard available on rig
- Disposable overalls and respiratory protection where required
- Additional PPE as determined by site specific risk assessment

### 3.7 SIGNAGE REQUIRED

- “Authorized Access Only” signs installed at entrance to drilling site
- Warning cones to define limited access drill site area

### 3.8 HAZARDS

Impact with services causing serious injury, equipment damage, service lines damage and community disruption, hazards associated with accuracy of service identification include:

- Services not physically being in location as stated on plans
- Inaccuracy of services located with detection equipment
- Services lines running outside of detected direction
- Services not being consistent at identified depths
- Services that are intermittently activated may not be detected by testing equipment when off source
- Redundant services that have potential to have live source still connected
- Services encapsulated protective materials may be undetectable

Other hazards to be identified by site specific risk assessment or Job Hazard Analysis (JHA).

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### 4 RESPONSIBILITY

It is the responsibility of the Supervising Driller to ensure drilling operations are carried out in a safe and efficient manner; Drillers have the following responsibilities:

- Comply with all legal and job role obligations
- Ensure equipment is operated within limitations and maintained
- Ensure risk assessments are conducted
- Ensure the underground services are identified, detected and all practical steps have been taken to ensure risk of underground services is eliminated.
- Ensure hand clearing is undertaken as per procedures to depths of 1.5m unless appropriate authorisations have been obtained in writing as described in this procedure
- Ensure housekeeping is maintained
- Ensure the training of off-siders and other operational staff in the requirements of this procedure
- Conduct tasks in accordance with statutory requirements, site procedures and any other relevant instructions

### 5 PROCEDURE

#### 5.1 UNDERGROUND SERVICE LOCATION

Service location is carried out for all Drilling activities where there is potential for underground services to be present.

For Drilling activities carried out where there would be no potential for underground services to be present, then written approval is required from the PCBU and the Drilling Manager, these circumstances could arise when:

- Drilling into solid rock formations where services could not be present
- Drilling in known hard land filled areas

Where underground service location is required a competent underground service locator is contracted to identify the services. Where possible this works is commissioned by the PCBU of the works and Driller carrying out the works is present during identification and detection. In instances where the Client coordinates the underground service locations, the completed USL plans, diagrams and photographs including details of equipment used, approx. depths, service plans are provided to the on Site Driller for review.

At any time the on Site Driller is not happy with the information provided or unclear about the underground services information provided, drilling shall not commence until such time appropriate checks have been undertaken.

In addition to the USL Plans detailing underground services identification and detection processes, the services locations are marked up on the ground at the intended drill site.

References to the colour coding of marks up shall be as per the site plans and photos.

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### 5.2 CLOSE PROXIMITY

Close proximity permits and approvals are detailed within Appendix 1 and include work clearance distances required by the various service providers. If these work clearances are encroached then the relevant approvals and permits must be obtained from the service provider.

As part of the USL assessment process the underground service providers provide warning notification of close proximity.

Clear documented approval must be obtained from the service provider prior to works commencing within their stipulated work clearance zones.

### 5.3 EXPOSING UNDERGROUND SERVICES

All identified underground services within a close approach of the drill hole are to be exposed by unobtrusive hand clearing prior to commencement of drilling. A cross section over the identified services shall be hand cleared in a pavement pit style to ensure locations are confirmed as per the USL Plan.

Photo 1 – Hand Cleared Section across underground service locations.



Services must be located and exposed prior to commencement of drilling, if services cannot be located, then drilling in the close proximity zone will be abandoned, unless further risk reduction measure are investigated and written permissions granted by PCBU and the Drilling Manager have been obtained.

### 5.4 HAND CLEARING

Hand clearing of holes is carried out to a minimum depth of 1.5m for all holes where underground services are present.

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Hand clearing includes the use of breaking bars with the non-intrusive end using gentle movements so as not to impact services. The vacuum excavation unit is used to hand clear along with hand auger and water blaster.

Considerations is given to the size of water blaster and pressure used for hand clearing.

The overall hand clearing is to be 20% bigger than the drill rod/strings and/or casing.

The hole is measured using dip tape and/ or the hand auger which has markers to determine depths, photos shall be taken of the tape depth and submitted as part of the drill logs.

### 5.5 CONCRETE CORING / CONCRETE CUTTING

Where possible concrete coring and cutting is to be avoided and alternative drill hole locations are to be considered. If concrete coring is necessary specific Job Hazard Analysis shall be carried out, with appropriate assessment and investigation to establish if any services could be present within the concrete.

## 6 PROCEDURE STEPS TABLE

Additional steps, procedures and hazards may be included here where appropriate for site specific tasks.

STEPS	PROCEDURE	IMPORTANT INFORMATION
1.	•	
2.	•	
3.	•	
4.	•	

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### 7 TRAINING AND COMPETENCY

This procedure is forms part of the Driller and Offsiders training program, each crew member is to review this procedure and sign agreement to comply with the procedure.

### 8 REFERENCE/ASSOCIATED DOCUMENTS

Document Number	Document Title or Information Source	Location
SOP-100	Rigging Up and Drilling Operations	Google Drive HSE-08
HSE-01	HSE Management System Manual	Google Drive HSE-01

### 9 DOCUMENT CONTROL

Version	Date	Description	Author	Approved
Version 1	2014	Close Approach Distances		David Penney
Version 2	Oct 2016	SOP-101 Underground services Identification Procedure	DP, CP, LV, ML.	David Penney

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### STANDARD OPERATING PROCEDURE RECEIPT SIGN OFF

#### SUPERVISOR TO HAND PROCEDURE TO EMPLOYEE, TRAINEE OR CONTRACTOR UPON COMMENCEMENT OF TRAINING

- Trainee to sign this copy and return to supervisor who will pass onto Training Supervisor for training records.
- Trainee to retain procedure for their own use and future reference.
- Training Supervisor to update Training Matrix of successfully completed training and/or instruction.

#### Comments:

<b>Trainee Name</b>		<b>Signature</b>		<b>Date</b>	
<b>Company Name</b>					
<b>Supervisor Name</b>		<b>Signature</b>		<b>Date</b>	
<b>Training Supervisor Name</b>		<b>Signature</b>		<b>Date</b>	

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