



Government of **Western Australia**
Department of **Commerce**

Guidance note
**Horizontal underground
directional drilling**

2016

**commission
for occupational
safety and health**

Foreword

This guidance note is issued by the Commission for Occupational Safety and Health (the Commission) under the provisions of the *Occupational Safety and Health Act 1984* (the OSH Act).

The tripartite Commission comprises representatives of employers, unions and government, as well as experts. It has the function of developing the occupational safety and health legislation and supporting guidance material, and making recommendations to the Minister for Commerce for their implementation. To fulfil its functions, the Commission is empowered to establish advisory committees, hold public inquiries, and publish and disseminate information.

The Commission's objective is to promote comprehensive and practical preventive strategies that improve the working environment of Western Australians. This guidance note has been developed through a tripartite consultative process and the views of employers and unions, along with those of government and experts have been considered.

Scope and application of this guidance note

This guidance note applies to all workplaces in Western Australia covered by the OSH Act. It provides guidance for employers and workers on minimising the exposure to underground asset strikes and associated hazards and some of the legislative requirements in the OSH Act and Occupational Safety and Health Regulations 1996 (the OSH regulations).

It is not possible to deal with every situation that may be found at workplaces. Therefore, the practical guidance in this document should be considered in conjunction with the general duties in the OSH Act, as well as specific requirements in the OSH Act and the OSH regulations.

Legislative framework for occupational safety and health *Occupational Safety and Health Act 1984*

The OSH Act provides for the promotion, co-ordination, administration and enforcement of occupational safety and health in Western Australia. It applies to all industries with the exception of mining and petroleum.

With the objective of preventing occupational injuries and diseases, the OSH Act places certain duties on employers, workers, self-employed people, manufacturers, designers, importers and suppliers.

The broad duties established by the OSH Act are supported by a further tier of statute, commonly referred to as regulations, together with non-statutory codes of practice and guidance notes.

Occupational Safety and Health Regulations 1996

The OSH regulations have the effect of spelling out specific requirements of the legislation.

They may prescribe minimum standards and have a general application, or define specific requirements related to a particular hazard or type of work. They may also allow licensing or granting of approvals and certificates etc.

Regulations and codes of practice

If there is a code of practice about a risk, either:

- do what the code of practice says; or
- adopt and follow another way that gives the same level of protection against the risk.

If there is no regulation or code of practice about a risk, choose an appropriate way and take reasonable precautions and exercise proper diligence to ensure obligations are met.

Guidance notes and guidelines

A guidance note or guideline is an explanatory document providing detailed information on the requirements of legislation, regulations, standards, codes of practice or matters relating to occupational safety and health, as approved by the Commission.

Disclaimer

Changes in law after this document is published may impact on the accuracy of information. The Commission provides this information as a service to the community. It is made available in good faith and is derived from sources believed to be reliable and accurate at the time of publication

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Horizontal underground directional drilling

Horizontal underground directional drilling, commonly called horizontal directional drilling, directional boring, or HDD, is a steerable trenchless method of installing underground pipe, conduit, or cable in a shallow arc along a prescribed bore path by using a surface-launched drilling rig, with minimal impact on the surrounding area. Directional boring is used when trenching or excavating is not practical. It is suitable for a variety of soil conditions and jobs including road, landscape and river crossings.

Horizontal Underground Directional Drilling (HUDD) occurs:

- on commercial construction sites;
- on residential construction sites; and
- on roadways, footpaths and verges.

Work involving horizontal underground directional drilling has risks

With the increased use of HUDD in Western Australia, new safety and health risks and unplanned asset strikes have been introduced for asset owners, drillers, bystanders and the community generally.

Who is at risk?

Underground asset owners include employers, persons in control of workplaces, utility (electricity, gas, telephone and water) providers and local government.

All underground asset owners have underground assets that if impacted by a HUDD could expose Western Australians to business interruption and risks to safety and health.

Minimise the exposure to underground asset strikes

In order to minimise exposure, underground asset owners should provide as far as is practicable, accurate 'as constructed' drawings to all requestors connected to the asset owners via the Dial Before You Dig Service (DBYD).

Prior to carrying out HUDD operations, drilling businesses are obliged to carry out a detailed risk assessment using the information gained. It is important to note that 'as constructed' drawings are not always available, or accurate, hence a prudent operator would undertake electronic detection and potholing to confirm the physical location of the service.

It is a required practice of most operators and clients to undertake physical confirmation of buried services as:

- depths may change with subsequent earthworks,
- certain electrical services are not readily detected in the absence of current flow (e.g. street lighting, intermittent road signage),
- on occasions, there is an absence or displacement of trench warning tape
- traffic light cabling has been absent from some DBYD diagrams
- in order to avoid cutting and splicing some cables are laid with loops outside the normal trench boundary specifications

NB: Manual handling tasks can be reduced by potholing using a vacuum method. This is usually also a more efficient method depending on soil type.

Some local authorities and asset owners will make provision in their contracts for ground penetrating radar scans prior to any works.

A high risk that may be encountered as an underground service is that of gas. It is a requirement to notify the relevant gas authority, obtain approval for the proposed works, and to operate within the gas supplier's mandatory risk management specifications.

After any new work ensure a fresh accurate diagrammatic representation is produced 'as constructed drawings'. Accurate records and the subsequent availability of 'as constructed drawings' are fundamental to future hazard identification and risk control.



Damage to Water Corporation main sewer pipeline by underground horizontal directional drill
Source Water Corporation

Legislation

Duties of employers

Section 19 of the OSH Act requires employers to provide and maintain a work environment, as far as is practicable, in which employees are not exposed to hazards.

There also exists a specific OSH Regulation concerned with the location of underground services at workplaces. Regulation 3.21 prescribes that persons in charge of a workplace must ensure that an accurate diagrammatic representation of the change to the service is prepared or amended as the case may be.

Regulation 3.21 Gas etc. services, employer etc. to record location of etc.

- (1) If there is a risk that work to be conducted at a workplace might interfere with any gas, water, sewerage or electrical service * then a person who, at the workplace, is an employer, the main contractor, a self-employed person or a person having control of the workplace must ensure that:
 - (a) the location of the service that might be affected is established; and
 - (b) an accurate diagrammatic representation of the service that might be affected is available at the workplace before the work commences.
- (2) If any person causes the location of any gas, water, sewerage or electrical service to a workplace to be changed then a person who, at the workplace, is an employer, the main contractor, a self-employed person or a person having control of the workplace must ensure that an accurate diagrammatic representation of the change to the service is either prepared or amended, as the case requires, to show the change.
- (3) A person who, at a workplace, is an employer, the main contractor, a self-employed person or a person having control of the workplace must ensure, where practicable, that 'as constructed' drawings showing the location of gas, water, sewerage and electrical service to the workplace are kept at the workplace.

* In addition communication services must be considered.

The Occupational Safety and Health (OSH) law also requires employers and employees to consult in order to resolve safety and health issues in the workplace. If an employee is concerned about their safety or health, they should raise the matter with their employer or safety and health representative if there is one.

Duties of employees

Section 20 of the OSH Act requires employees to take reasonable care of their own safety and health and avoid adversely affecting the safety and health of others. An employee must comply (as far as reasonably able) with safety instructions, use the protective equipment provided and report work hazards or injuries.

Industry action so far

Asset owners have, in most cases, incorporated minimum training requirements in the contracts they have with HUDD service providers.

An example of a training requirement.

- Personnel working in proximity of HUDD operations are required to have successfully completed unit of competency RIICCM202D – Identify, locate and protect underground services qualification with a Registered Training Organisation.
- Personnel required to operate HUDD equipment are required to have successfully completed, or substantially worked towards completion of, a Certificate 3 qualification in one of the following courses, or current equivalent courses:
 - RII30915 – Cert III in Civil Construction;
 - RII31615 – Cert III in Trenchless Technology, or
 - RII31815 – Cert III in Drilling Operations.
- And must have successfully completed the mandatory unit RIICCM202D – Identify, locate and protect underground services being a mandatory unit in the above qualifications.
- NB: Personnel holding Civil Construction or Drilling certification are required to have successfully completed unit of competency RIICCTT301D - Conduct Fluid Assisted Directional Boring or current equivalent

The training requirements become contractual obligations between the asset owner contracting the service and the underground direction drilling entity.

All HUDD contractors should therefore ensure their personnel have training appropriate for the work involved in the contracts for which they bid.

Drilling entities and drillers are recommended to contact their training providers regarding – ‘recognition of prior experience with respect to the operator’ and ‘recognition of prior learning.’

Safe work method statements for construction work

Essential to the task of carrying out underground horizontal directional drilling tasks competently is:

- underpinning training, qualification or experience, or a combination of those things; and
- having the acquired knowledge and skills to do the task competently.

Regulations 3.137 defines high-risk construction work:

3.137. Terms used:

High-risk construction work means any of the following

- ...(g) ‘construction work involving excavation to a depth of more than 1.5 metres’
- (j) ‘construction work on or near pressurised gas pipes (including distribution mains)’
- (l) ‘construction work on or near energised electrical installations and lines (whether overhead or underground)’; and
- (o) ‘construction work on or adjacent to roads or railways that are in use’

From the definition HUDD is high risk construction work requiring a safe work method statement in most circumstances.

Regulation 3.143 determines the requirement for safe work method statements:

3.143. High-risk construction work, safe work method statements required for

- (1) If high-risk construction work is, or is to be, done at the construction site, the main contractor must, as far as practicable, ensure that —
 - (a) each person identified by the main contractor as having day-to-day, on site control of high-risk construction work at the site gives the main contractor a safe work method statement for the high-risk construction work that the person is in control of before the work commences; and
 - (b) the statements are kept up-to-date.

For those persons developing task specific Safe Work Method Statements for underground directional drilling tasks you should include the training pre-requisites in the Safe Work Method Statements.

INSERT ORGANISATION LOGO

INSERT SWMS NUMBER

OHSE 007–Safe Work Method Statement (SWMS)

Organisation details			
Organisation Name:		Contact Name:	
ACN/ABN		Contact Position:	
Address:		Contact Phone No:	
Project details			
Project:		Area:	
Activity:		This SWMS has been developed in consultation with: Reviewed by: _____ Position: _____ Date: _ / _ /	
Resources / Trades Involved:			
Equipment Used:			
Maintenance checks:			
Materials Used:			
Occupational Safety and Health or Environmental Legislation:		Codes or Standards applicable to the works:	

INSERT ORGANISATION LOGO

INSERT SWMS NUMBER

Level	Description of Consequence or Impact	Consequence	Likelihood/Probability		
			L <i>Likely</i>	M <i>Moderate</i>	U Unlikely
H (1) <i>(High level of harm)</i>	Potential death, permanent disability or major structural failure/damage. Off-site environmental discharge/release not contained and significant long-term environmental harm.	H (1) <i>(High)</i>	1	1	2
M (2) <i>(Medium level of harm)</i>	Potential temporary disability or minor structural failure/damage. On-site environmental discharge/release contained, minor remediation required, short-term environmental harm.	M (2) <i>(Medium)</i>	1	2	3
L (3) <i>(Low level of harm)</i>	Incident that has the potential to cause persons to require first aid. On-site environmental discharge/release immediately contained, minor level clean up with no short-term environmental harm.	L (3) <i>(Low)</i>	2	3	3
Level	Likelihood / Probability				
Likely	Could happen frequently				
Moderate	Could happen occasionally				
Unlikely	May occur only in exceptional circumstances				

Item	Job steps	Hazards	Risk Class/ Ranking	Controls	Name of persons responsible for work

INSERT ORGANISATION LOGO

INSERT SWMS NUMBER

Qualifications and experience required to complete the task	Personnel, Duties and Responsibilities (Supervisory staff and others)	Training Required to Complete Work
Engineering Details / Certificates / WorkSafe Approvals:		

INSERT ORGANISATION LOGO

INSERT SWMS NUMBER

This SWMS has been developed through consultation with our employees and has been read, understood and signed by all employees undertaking the works:		
Print Names:	Signatures:	Dates:

Review No	01	02	03	04	05	06	07	08	09
Initial:									
Date:									

Further information

Further information relating to many of the matters referred to above may be obtained from:

Dial Before You Dig WA Ltd
77 North Lake Road,
Myaree WA 6154
Tel: 08 9330 3166
Email: wa@1100.com.au

Department of Commerce, WorkSafe Division
www.commerce.wa.gov.au
303 Sevenoaks St
CANNINGTON WA 6107
Tel: 1300 307 877
Email: safety@commerce.wa.gov.au

Chamber of Commerce and Industry
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**commission
for occupational
safety and health**

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Comprehensive work safety and health information
can be found at: www.worksafe.wa.gov.au

Department of Commerce
www.commerce.wa.gov.au

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Administration: 1300 307 877

Website: www.worksafe.wa.gov.au

Email: safety@commerce.wa.gov.au

National Relay Service: 13 36 77

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assist people with special needs