

# RIICRC208E

## Lay Pipes

### Learner Guide Instructions

Who is this document for?

The learner.

What is in this document?

- Course information that matches the PowerPoint presentation.
- Review questions.
- Practical assessment instructions for learners.

What do you need to do before you use it for the first time?

1. Rebrand the document.
2. Review the document as part of your validation process.
3. Set the reading and test time limits that are highlighted in pink at the end of the document.

**See the 'Read Me First' document for a complete set of instructions on how to use these resources.**

# LEARNER GUIDE

## RIICRC208E Lay Pipes

Learner Name:	
Learner ID:	
Learner Contact Number:	
Learner Email Address:	
Date Training Commenced:	

### This Book Contains:

- ☐ Course Information.
- ☐ Review Questions.
- ☐ Practical Assessment overview and instructions.

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## 1.1 Introduction

These materials are based on the National Unit of Competency **RIICRC208E Lay Pipes**.



You will learn about:

- ◆ Planning and preparing to lay pipes.
- ◆ Setting out excavations.
- ◆ Installing bedding materials.
- ◆ Laying pipes.
- ◆ Cleaning up the work area.

### 1.1.1 What is Pipe Laying?

Pipe laying is the process of installing long sections of pipe for transporting materials (such as water, sewerage and oils) from one area to another.

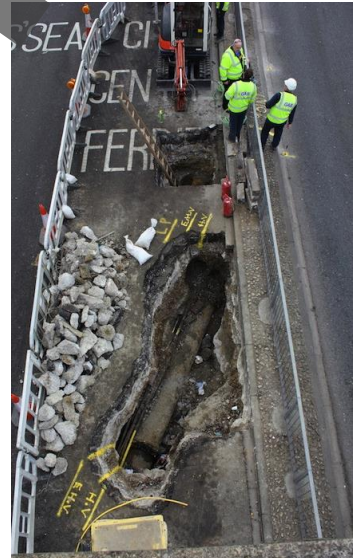
Pipes may be laid above ground, below ground and even under water. They may be laid in almost any ground conditions in both urban and rural areas.

Pipes can be made from various materials and are used in many civil construction activities such as:

- ◆ Sewerage works.
- ◆ Concrete works.
- ◆ Storm water drains and culverts.
- ◆ Water supply.
- ◆ Supply of gas and other substances.

Pipe laying work can be as simple as placing pipes straight into a trench or it can be more complex where roads, railway tracks and embankments can get in the way of your work.

You need to understand the correct process for your site in order to ensure all pipes are laid properly and will last the expected lifetime.



## 1.1.2 Types of Pipe

Types of pipe you may need to install can include:



- ◆ Steel.
- ◆ Vitrified clay culvert.
- ◆ Corrugated aluminium alloy.
- ◆ Fibre reinforced concrete (FRC).
- ◆ Reinforced concrete pipe (RCP).
- ◆ Ribbed PVC.
- ◆ Concrete lined corrugated steel culvert.
- ◆ Bituminous coated corrugated steel.
- ◆ HDPE smooth lined corrugated plastic.
- ◆ Corrugated steel culvert pipe and pipe arch.

Most pipes are classed as being either flexible or rigid. This depends on how the pipe reacts as it is being installed.

Flexible pipes have the ability to move under loads without being damaged. Rigid pipes generally cannot move more than a set amount without being damaged and cracking.

Regardless of the type of pipe used, they require the appropriate bedding materials and backfill to be used to prevent damage to the pipes.



## 1.2 Working Safely

You must follow all safety rules and instructions when performing any work. If you are not sure about what you should do, ask your boss or supervisor. They will tell you what you need to do and how to do it in a safe way.





## 1.2.1 Health and Safety Rules

Every workplace has to follow laws and rules to keep everyone safe. There are 4 main types:

Type	Explanation
<b>Acts</b>	These are laws that you have to follow.
<b>Regulations</b>	These explain what the law means.
<b>Codes of Practice</b>	These are instructions on how to follow the law, based on industry standards.
<b>Australian Standards</b>	These tell you what the minimum requirement is for a job, product or hazard.

Some states use OHS laws, and other states use WHS laws. They both talk about the same thing, but use different words or names for people. If you have any questions about safety rules you should talk to your boss or supervisor.

## 1.2.2 Operations Documentation

Before starting your work you need to make sure you have access to all operations documentation for the job. This will help you to do your work in the safest way and make sure all work is compliant.

Operations documentation includes:

### Site Details

The information and safety requirements of the workplace environment (where you will be working).

### Hazard Details

Any hazards in the work area or related to the work. This could also include instructions on how to handle dangerous or hazardous materials.

### Task Details

Instructions of what the work is or what you will be doing (this can include diagrams or plans). Also instructions on how to safely do the job.

### Faulty Equipment Procedures

Isolation procedures to follow or forms to fill out.

### Signage

Site signage tells you what equipment you need to have, or areas that are not safe to be in.

### Emergency Procedures

Instructions on what to do in emergency situations, for example if there is a fire, accident or emergency where evacuation or first aid is needed.

### Equipment and Work Instructions

Details of how to operate plant and equipment and the sequence of work to be done.

### 1.2.3 How to Keep Everyone Safe

WHS law says that all companies and workers need to keep themselves and other people safe while they work. This is called a duty of care.

To keep yourself and other workers safe you need to:  
Follow your instructions.

- ◆ Follow all workplace rules.
- ◆ Make sure all equipment is safe to use.
- ◆ Carry out your work safely.
- ◆ Report any problems.



If you think something is dangerous tell your boss or supervisor as soon as possible.



Your worksite will also have instructions for working safely including:

- ◆ Emergency procedures, including using fire fighting equipment, first aid and evacuation.
- ◆ Handling hazardous materials.
- ◆ Safe operating procedures.
- ◆ Personal protective clothing and equipment.
- ◆ Safe use of tools and equipment.

### Review Questions

<b>1.</b>	What are the 4 types of health and safety laws and rules?	<input type="checkbox"/>
1.		
2.		
3.		
4.		



## 2.

List 3 things that may be included in 'operations documentation'.



1.

2.

3.

## 1.3 Work Instructions

You need to be clear about what work you will be doing. Make sure you have everything about the job written down before you start. This includes what you will be doing, how you will be doing it and what equipment you will be using.

Make sure you have all of the details about where you will be working. For example:

- ◆ **The Site** – Is there clear access for all equipment? Are there buildings, structures, facilities or traffic in the way?
- ◆ **The Weather** – Is there wind, rain or other bad weather? Is it too dark?
- ◆ **Facilities and Services** – Are there power lines or underground services to think about?
- ◆ **Traffic** – Are there people, vehicles or other equipment in the area that you need to think about? Do you need to get them moved out of the area? Do you need to set up barriers or signs?
- ◆ **Hazards** – Are there dangerous materials to work around or think about? Will you be working close to traffic or machinery?



You also need to make sure you have all of the details about the kind of work you will be doing:

- ◆ **The Task** – What type of pipes need to be laid? How many? How long will it take?
- ◆ **Equipment and Materials** – What type of equipment will be used? How big is it? How much room does it need? Are there any special materials or chemicals that will be used?
- ◆ **Communications** – How are you going to communicate with other workers?
- ◆ **Procedures and Rules** – Do you need any special permits or licences? Are there site rules that affect the way you will do the work?

### 1.3.1 Reading and Checking Your Work Instructions

All work needs to follow worksite, environment and company safety procedures.

Procedures help to make sure that all work is done in a safe way, without damaging equipment or putting people in unsafe situations. They also help to make sure that work is done in the correct order and doesn't interrupt or get in the way of other work that is happening on the site.

Your work instructions will tell you the safest way to do the job, and the equipment that you will need to use. It is a good idea to check your work instructions with your boss or supervisor to make sure you know exactly what you need to do.

In some situations you may be required to put together a clear set of instructions from various sources. To do this you may need to understand and obtain relevant information from site drawings, blueprints or plans.

If you don't know where to get your instructions or you can't understand them, you can ask your boss or supervisor. They will tell you where to find your work instructions and explain what they mean.



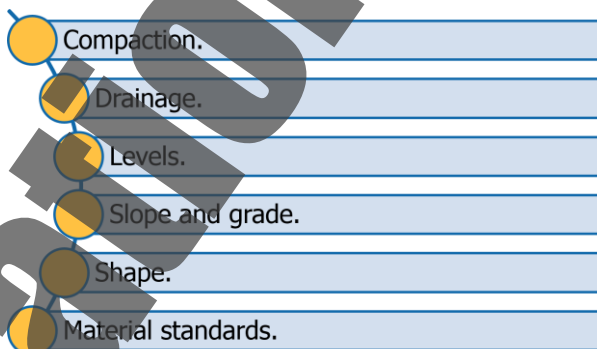
### 1.3.2 Job Specifications



Job specifications will tell you the types, quantities, grades and classifications of materials you will be working with.

Every task or activity relating to laying pipes will also have quality requirements. These outline when tasks need to be completed and the required standard of the work.

They relate to:



These requirements will guide you to make sure you are achieving the quality standard for the project. To apply the requirements, you need to follow instructions and procedural documents exactly. You will need to get the information out of these documents and use it to do your job. It is essential that these quality requirements are known, understood, and adhered to in all pipe laying activities and tasks.

Specifications may be given to you as drawings and plans. Plans are usually "scale drawings" that represent a large area on a small sheet of paper and show proportion at the same time.



Project plans and maps give you an overview of the site, for example:

- ◆ The location of your work area in relation to the whole work site.
- ◆ The position of stockpiles, work zones, roads and access areas.
- ◆ The location of environmentally sensitive or 'no go' areas.
- ◆ Contours, or the lay of the land, e.g. slopes, banks, depressions.

Depending on the project, drawings may be very detailed or they could be simple sketches.

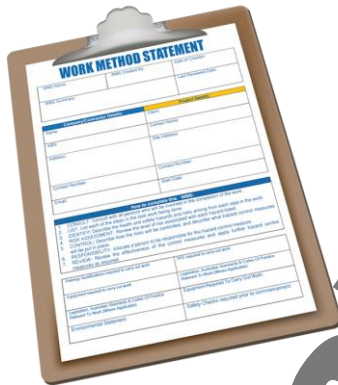
You should learn about the conventions and symbols used in the plans and drawings so you can understand what the information means.

### 1.3.3 Organising Work Activities

After receiving and clarifying all of your work instructions and requirements, you will need to organise and plan for your work activities. This is a major component of pipe laying activities because each step must be completed before the next step can start.

Organising your work activities involves scheduling your daily and weekly tasks to complete all assigned tasks in the best, most efficient manner that still meets the requirements of the worksite. It will allow you to plan for the time ahead to ensure that project timelines do not get out of hand.

While you will be performing your own work activities you will also be involved with the activities of plant and machinery operators. This means you are required to sequence work activities and work with others onsite concerning timing issues.

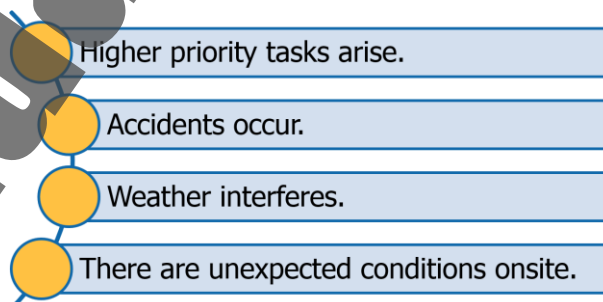


Some people prefer a handwritten checklist or work method statement, others a computerised diary entry. What works for you is the most important thing.

A Work Method Statement (WMS) is a list of steps that outlines how a job will be done. It also includes any hazards that occur at each step, and what you need to do about them. These statements can also be known as Safe Work Method Statement (SWMS), Job Safety Analysis (JSA) or Safe Operating Procedure (SOP).

Work method statements are a great tool for organising your work activities and making sure you have completed everything. This is because they outline the details of all tools, equipment and coordination with other workers relating to your job. Make sure all of these are available and ready before you start.

Flexibility is important when organising your work priorities to allow you to reorganise if:



You need to take responsibility for your own activities to make sure that your assigned activities will be completed to the required standard, in the documented manner and within appropriate timeframes.

### 1.3.4 Worksite Communications

A pipe laying project is a team effort, from the planners through to the inspectors who check the final product.



It is important to coordinate your activities with other workers when you are planning for and carrying out the work to make sure everyone knows:

- ◆ The work being completed.
- ◆ How, when and where you will be operating.
- ◆ What they need to do.

All workers on site must understand their own role and the roles of others before starting work. It helps to make sure work is done safely and efficiently.

Workers you may need to coordinate with on site include:

- ◆ Supervisors and management.
- ◆ Plant and vehicle operators.
- ◆ Traffic controllers or other workers on the site.
- ◆ Team leaders.
- ◆ Site safety personnel.
- ◆ Processing plant operators.
- ◆ Maintenance workers.
- ◆ Crane and float operators.
- ◆ Contractors.
- ◆ Inspectors, both internal and external, including WHS, environmental and quality assurance officers.
- ◆ Site visitors.



You need to resolve any coordination requirements with all appropriate personnel before starting your work. This can be done by organising communications equipment, filling out documents and deciding on any special hand or whistle signals that will be used with other personnel.



Some communication methods may involve:

- ◆ Site meetings.
- ◆ Toolbox meetings.
- ◆ Team briefings.
- ◆ Notice boards.
- ◆ Policies, procedures and manuals.
- ◆ Work Methods Statements (WMS).
- ◆ Communications equipment, including:
  - ◆ Two-way radio.
  - ◆ Mobile phones.
  - ◆ Computers.
  - ◆ Landline phones.
  - ◆ Whistles, horns or bells.
  - ◆ Hand signals.
  - ◆ Flag signalling.
  - ◆ Verbal instructions.

If you are at all unsure about any aspects of communication on your worksite, re-read your work instructions or plans and speak with your supervisor.

## Review Questions

**3.**

Why is it a good idea to check your work instructions with your boss or supervisor?





4.

- a) Why should you learn about the conventions and symbols used in plans and drawings?  
b) What are three (3) pipe laying activities that have quality requirements related to them?



a)

b)

1.

2.

3.

5.

What does organising your work activities involve?



## 1.4 Identify and Manage Risks and Hazards

Before you start work, you need to check for any hazards or risks in the area.

A **Hazard** is a thing or situation with the potential to cause harm or damage.

A **Risk** is the chance of a hazard causing harm or damage.

If you find a hazard or risk you need to do something to control it. By lowering or removing risks we can make hazards less dangerous. This will help to make the workplace safer.





## 1.4.1 Identify Hazards

Part of your job is to look around to see if you can find any hazards before you start any work.

When you start checking for hazards, make sure you look everywhere. A good way to do this is to check:

- ◆ Up high above your head.
- ◆ All around you at eye level.
- ◆ Down low on the ground (and also think about what is under the ground).



Some hazards you should check for in the work area:

- ◆ Overhead and underground services.
- ◆ Uneven, soft, slippery or unstable terrain.
- ◆ Trees.
- ◆ Fires.
- ◆ Bridges.
- ◆ Excavations.
- ◆ Buildings.
- ◆ Traffic.
- ◆ Embankments.
- ◆ Cuttings.
- ◆ Insufficient lighting.
- ◆ Hazardous materials.
- ◆ Hot or sharp materials.
- ◆ Structures such as site offices and scaffolds.
- ◆ The weather and environment.
- ◆ Other workers or site visitors.
- ◆ On site vehicles, plant, equipment and machinery.
- ◆ Poorly maintained or faulty equipment.
- ◆ Road surfaces and edge solidity.
- ◆ Chemical hazards such as fuel, chemicals, contaminants, gases or dusts.



## 1.4.2 Assess Risks

Once you have identified the hazards on site or related to the work you will be doing you may be required to assess their risk level.

Risk levels are worked out by looking at 2 factors:

<b>Consequence</b>	How bad will it be if the hazard causes harm?
<b>Likelihood</b>	What is the chance of the hazard causing harm?

You can use a table like the one shown here to work out the risk level:

	Consequence				
	1. Insignificant	2. Minor First Aid Required	3. Moderate Medical Attention and Time Off Work	4. Major Long Term Illness or Serious Injury	5. Catastrophic Kill or Cause Permanent Disability or Illness
Likelihood					
1. Rare	Low	Low	Moderate	Moderate	Moderate
2. Unlikely	Low	Low	Moderate	Moderate	High
3. Possible	Low	Moderate	High	High	Extreme
4. Likely	Moderate	Moderate	High	High	Extreme
5. Almost Certain	Moderate	High	High	Extreme	Extreme

For example, a hazard that has a **Major** consequence and is **Almost Certain** to occur has a risk level of **Extreme**.

	Consequence				
	1. Insignificant	2. Minor First Aid Required	3. Moderate Medical Attention and Time Off Work	4. Major Long Term Illness or Serious Injury	5. Catastrophic Kill or Cause Permanent Disability or Illness
Likelihood					
1. Rare	Low	Low	Moderate	Moderate	Moderate
2. Unlikely	Low	Low	Moderate	Moderate	High
3. Possible	Low	Moderate	High	High	Extreme
4. Likely	Moderate	Moderate	High	High	Extreme
5. Almost Certain	Moderate	High	High	<b>Extreme</b>	Extreme