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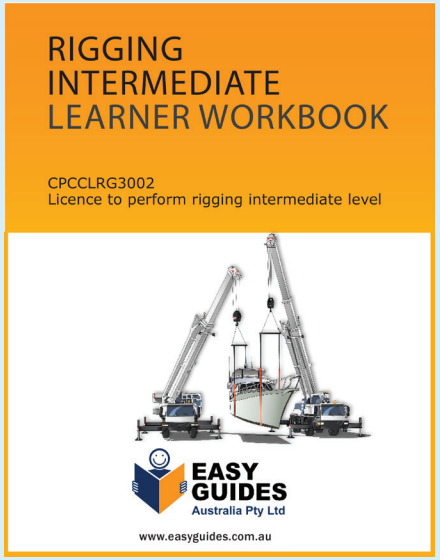

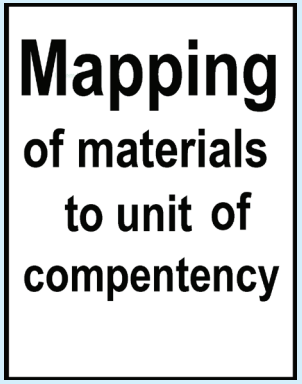

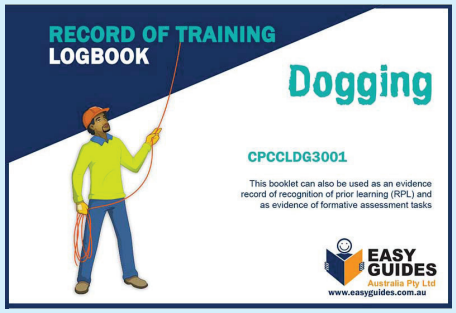

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CONFINED SPACES LEARNER GUIDE

LLN READY

Training support material for:

RIIWHS202E
Enter and work in confined spaces

Produced by:

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INTRODUCTION TO CONFINED SPACES

What 'enter and work in a confined space' means

A confined space is an area which is **enclosed**. It is not designed for people to go into. It may be hard to get in and out of because of a small or blocked entry/exit.

A confined space has one or more of these **dangers**:

- A dangerous level of oxygen
- Something in it (like a gas) that could cause a fire or explode
- Contaminants such as gasses, vapours or dust
- Something that could engulf (surround) you and make it hard to breathe.

Entering a confined space means your head or upper body go **into** the space.

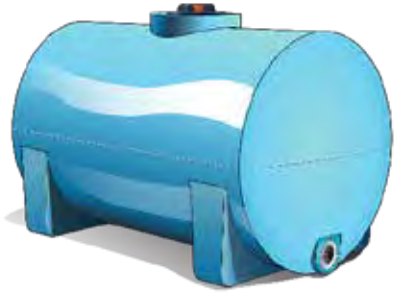
Confined spaces may include:

- Storage tanks, tank cars, process vessels, boilers, pressure vessels, silos and other tank-like compartments
- Open-topped spaces such as pits or degreasers
- Pipes, sewers, shafts, ducts and similar structures
- Shipboard spaces entered through a small hatchway or access point, cargo tanks, cellular double bottom tanks, duct keels, ballast and oil tanks and void spaces (but not including dry cargo holds).

ABOUT CONFINED SPACES

What are some examples of confined spaces?

Water or storage tanks



Ducts

Silos

Shipping containers

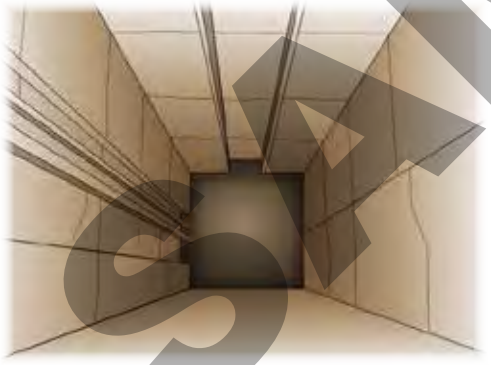
Roof or floor cavity

Examples of confined spaces (continued)

Underground sewer

Trenches, tunnels or pipes

Shafts or wells



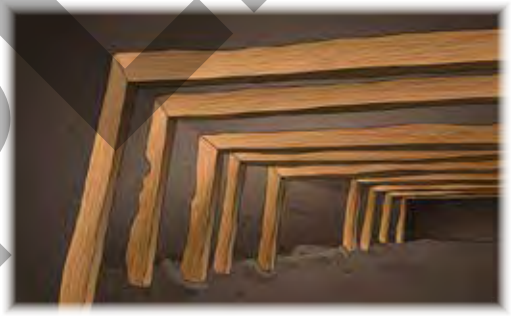
Some spaces are NOT considered confined spaces

If a space is supposed to have people go into it, it is not always a confined space under the WHS act. The space must have safe entrances, exits, good lighting and airflow.

Some examples are:

Spray booths or sand blasting booths

Mines



Cool stores (that have large doors for access)

Trenches

As long as they **do not** have any dangerous gasses or fumes.

Sometimes you may not be sure if a space is a confined space or not. If you are not sure, it is safer to treat the space as a confined space.

If you decide a space is a confined space

If you decide that a space is a confined space there are rules you **must** follow.

You need to put up signs and barricades warning of the danger

You need an entry permit system

You need to make sure people have the right **training** to work in the space.

Your company might have Standard operating procedures (SOPs).

The SOPs will tell you what you need to do if you decide a work area is a confined space.

Who can enter a confined space?

You can only enter a confined space if your name is on the **entry permit**.

Before someone can put you on the entry permit you must be **competent** (experienced and trained).

CONFINED SPACE HAZARDS

Hazards of working in a confined space

Fumes or gasses can make you unconscious (put you to sleep) or kill you

Fire or explosion from gasses

Not enough oxygen in the air to breathe properly

Noise levels can be higher in a confined space. You may damage your hearing if you do not wear hearing protection.

Hazards of working in a confined space (continued)

Loose materials could engulf (smother) you.

For example, if you are working in a wheat silo, the wheat you are standing on is a loose material.

It is easily displaced (moved) allowing you to sink and be trapped under the wheat.

You will not be able to breathe.

You may need to wear PPE such as a harness, which makes it hard to lift or carry tools or equipment.

You could strain a muscle or drop something.

Hazards of working in a confined space (continued)

The space might be too cold or too hot

You could slip, trip or fall because of hazards like rough ground or wet floor

There could be hazards you cannot see because of poor lighting

Cables or pipes could electrocute or burn you

Hazards of working in a confined space (continued)

A machine could entangle or crush you. You should always isolate the danger when doing maintenance on machinery.

Your skin could touch a dangerous chemical. This could cause a skin allergy, irritation, burns or worse.

Biohazards

Moulds, germs, or animals (such as insects, rats or snakes) may live in the space.

PAPERWORK, SIGNS AND BARRICADES

Enter and work in confined spaces

RIIWHS202E

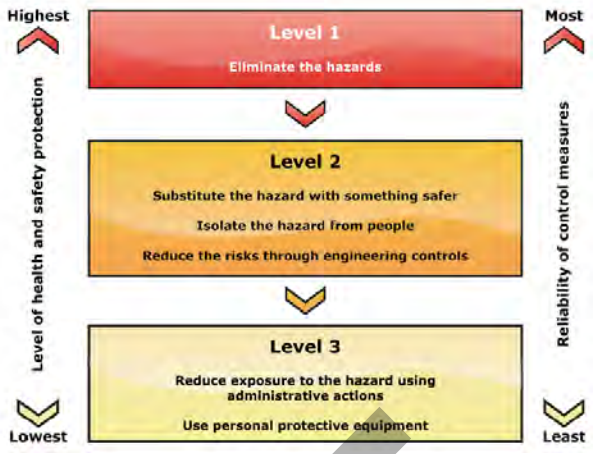
Learner Workbook Student Copy

(Formative Assessment)

CONTENTS

Question 3 (PC 1.3)

The Hierarchy of Hazard Controls has six steps to follow to control hazards. The first (and most effective) is elimination. List the other five.



Question 4 (PC 1.1)

Before you start work, what should you check so you know what to do?

Question 5 (PC 1.2)

What documents (paperwork) will help you work out the safety needs of the worksite?

Question 6 (PC 1.3, 1.4)

Why do you need to check the risk assessment against the entry permit before starting work?

Question 7 (PC 1.4, 2.6)

Why do you need an Entry Permit to work in a confined space?

Question 8 (PC 1.7)

If you are an employer and you decide an area is a confined space, what must you do to warn people?

Question 9 (PC 2.2)

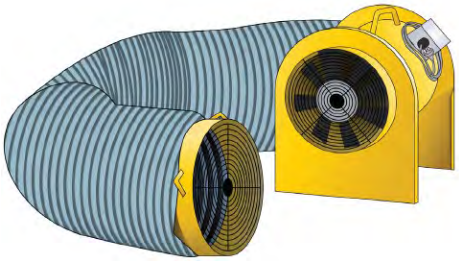
What type of tests/inspections should be carried out on a confined space before a work permit can be issued?

Question 9 (PC 2.2)

What type of tests/inspections should be carried out on a confined space before a work permit can be issued?

Question 21 (PC 2.2, 2.3, 2.4)

You may need to heat a space before workers can enter it. What other things might you do to prepare a confined space for entry?

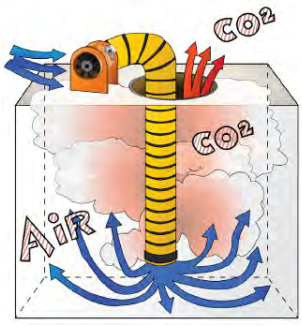


Question 22 (PC 1.3, 2.3)

What can you do to isolate a hazard?

Question 23 (PC 2.6)

What does purging a confined space mean?



Question 24 (PC 2.5)

Why do confined space teams need a standby person?

Question 25 (PC 1.6, 2.5)

Q) You are the standby person and you see a worker has collapsed inside the confined space. What do you do? (Tick the right answer)

a) Rush into the confined space to rescue the worker; or

b) Immediately put the emergency response / rescue plan into action.

Question 26 (PC 1.6, 2.5)

Q) How does the standby person communicate with workers in the confined space?

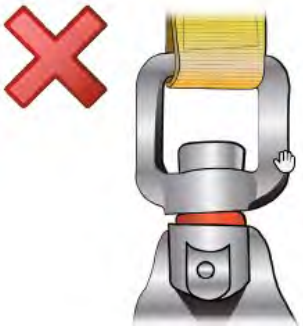
Question 27 (PC 1.1)

(Q) Circle as True or False the following statements about fall arrest safety equipment:

a) Use a personal energy absorber if your fall arrest safety equipment does NOT have one built in.	**Yes / No**
b) Use a personal energy absorber when you are using a retractable lanyard.	**Yes / No**
c) Never use a personal energy absorber if the lanyard has a built-in energy absorber.	**Yes / No**
d) Never use a personal energy absorber when you are using an inertia reel or retractable lanyard.	**Yes / No**

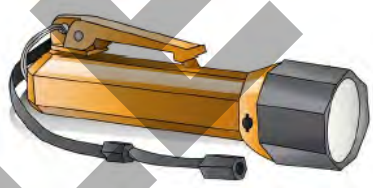
Question 28 (PC 1.8)

The equipment you need to use is damaged and unusable, what should you do?



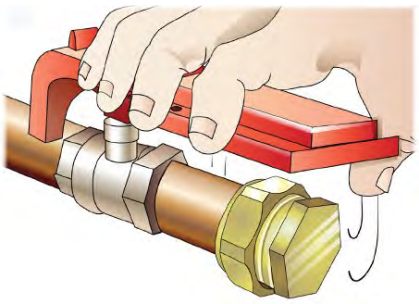
Question 29 (PC 1.5)

When should you make sure you are using intrinsically safe equipment? Why?



Question 30 (PC 3.1, 3.2, 3.3, 3.4, 3.5)

List some steps you must take as you finish the job and leave a confined space.

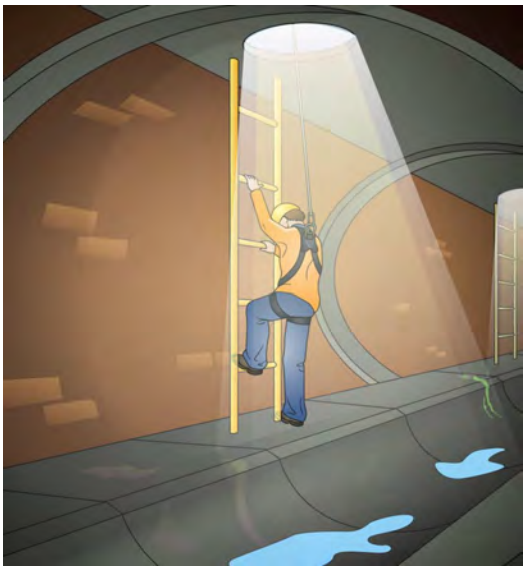


Enter and work in confined spaces

RIIWHS202E

Practical Evidence Tasks

(Formative assessment)

	
Inspecting a sewer	Entering a silo to clear a blockage below
	
Unloading a shipping container by hand	Unloading a shipping container using a petrol forklift truck
	
Entering a trench to retrieve a shovel	Entering a trench to do some plumbing using primer and glue
Your confined spaces training area. *Your trainer will show you this area.*	

	Confined Space Criteria						**Confined space?**
	For the work area to be considered a 'confined space', you must answer 'YES' to all 3 of the following, and, any one of the following						
Description of the space and work	**A** Is the space enclosed or partially enclosed?	**B** Is the space not designed or intended to be occupied by a person?	**C** Is the space designed or intended to be, at normal atmospheric pressure while any person is in the space?	**D** Does the space represent a risk from: Harmful airborne contaminants	An unsafe oxygen level	Engulfment	If you answer yes to A, B, C and at least one of D, then the space is a confined space.
Inspecting a sewer							
Entering a silo to clear a blockage below							
Unloading a shipping container by hand							
Unloading a shipping container with a petrol powered forklift truck							
Entering a trench to retrieve a shovel							
Entering a trench to do some plumbing using primer and glue							
Your confined spaces training area							

Practical task 3
Work requirements, procedures and instructions worksheet (PC 1.1, 1.2, 1.5, 2.1, 2.4)

This is a group task. Your trainer will describe a type of work, and show you a work area. Discuss the following questions with your group, and write down the answers below. When you have finished, complete your own JSEA or SWMS.

What paperwork, documents or work permits do you need to fill out before you start this work? (eg: site induction forms, hot work, SDS (which used to be called MSDS) if you are using chemicals, confined spaces entry permit, etc)
Think about the hazards and risks with this type of work. You will plan for confined spaces hazards later. What are the dangers or risks of this type of work if you did this work in a normal workplace?
How will you reduce or minimise these risks?
What are the hazards (dangers) with doing this work in a confined space?

Practical task 4

Emergency Plan (PC 1.6)

In this task, you will work in a group of 3-4 to write an emergency plan. Your plan must let you rescue someone who is injured or unconscious in the confined space. As part of this plan, you will also need to inspect equipment, anchor points and/or static lines, and recommend the best course of action if something does not pass your checks.

For this task, you will assume that workers will connect to a harness system. Each person in the group must take on part of the responsibility for the rescue. You must fill out each section of the rescue plan. You should make sure you could rescue someone as quickly as possible.

What you need for this task

- Tour of the work area
- Pen
- Paper
- Emergency plan template
- Rescue equipment (this may be static lines, lanyards, harnesses, inertia reels, energy absorbers, etc. Your trainer will advise what is available)

How to do this task		✓
1	Start at the top of the rescue plan and fill out the emergency contact, type of work and workers details. For this exercise, you can be a rescuer and a worker.	
2	Work out who will be in charge of what part of the rescue. In some cases, the same person can be responsible for a couple of things. For example; the person responsible for calling the ambulance, can also administer first aid once the person has been rescued.	
3	In the rescue tasks, fill out each section and work out how much time each step would take. Add up all the steps and make sure you can rescue someone as quickly as possible.	
4	Conduct pre-work inspections of all the equipment you will use for the work. This should include any harness, lanyard, energy absorber, anchor points, etc	
5	Discuss the First Aid and Treatment requirements, and make sure all workers are aware of the correct treatments.	
6	Put your harness on and make sure it fits correctly. Check the other members of your team.	
7	Do the final checks and have your trainer sign off for approval	

Emergency Rescue Plan

10012

Emergency Contact ✆ 000

Other emergency numbers: .....

Site address: .....

Nearest cross road (other directions): .....

Site access information: (level, floor, entrances, etc): .....

.....

Access point for emergency services: .....

.....

WORK DETAILS (TYPE OF WORK BEING PERFORMED)

WORKERS NAMES	CONTACT INFO

PRE WORK EQUIPMENT CHECKS (TO BE INITIALLED BY PERSON CHECKING THE EQUIPMENT)

Anchor points	Initial:	Static lines	Initial:	Lanyards	Initial:	Harnesses	Initial:
EWP	Initial:	Inertia reels/lifelines	Initial:	Tripod	Initial:	Scaffold	Initial:
Snap hooks/karabiners	Initial:	Ropes/Slings	Initial:	Energy absorbers	Initial:	Trauma straps	Initial:
OTHER	Initial:		Initial:		Initial:	Gas Monitors/B.A	Initial:
	Initial:		Initial:	Name:		Signature:	

WHO IS IN CHARGE OF:	NAME	CONTACT INFORMATION
The rescue (primary contact)		
Contacting emergency services		
Stand-by person (observing if a fall occurs)		
Ensuring rescuers are safe		
First Aid (including suspension trauma treatment)		

RESCUE TASKS	DETAILS OF STEPS IN RESCUE	PEOPLE RESPONSIBLE (NAME AND CONTACT)	EQUIPMENT NEEDED FOR RESCUE	TIME NEEDED
Does equipment need to be set up or moved before you can perform the rescue?	Practiced and timed: Yes/No		Equipment tested: Yes/No	:
What are the steps to rescue the person?	Practiced and timed: Yes/No		Equipment tested: Yes/No	:
Other factors: *Layout of building, access problems, weather conditions, language barriers, etc.*	Practiced and timed: Yes/No		Equipment tested: Yes/No	:
If the person is injured or unconscious, will this affect your ability to rescue them?	Practiced and timed: Yes/No		Equipment tested: Yes/No	:
			TOTAL TIME NEEDED FOR RESCUE :	:

EQUIPMENT NEEDED FOR RESCUE (TO BE INITIALLED BY PERSON CHECKING THE EQUIPMENT)

Rescue ladder	Initial:	Static lines	Initial:	Lanyards	Initial:	Harnesses	Initial:
EWP	Initial:	Inertia reels/lifelines	Initial:	Tripod/scaffold	Initial:	Winches	Initial:
Snap hooks/karabiners	Initial:	Ropes/Slings	Initial:	Energy absorbers	Initial:	Trauma straps	Initial:
First Aid kit	Initial:	Crane	Initial:	Spreader bars	Initial:	Stretcher	Initial:
OTHER	Initial:	Gas Monitors/B.A	Initial:	Name:		Signature:	

COMMUNICATIONS TASKS	COMMUNICATIONS METHOD	TESTED?
Communication during work		YES / NO
Stand-by Person to raise alarm		YES / NO
Rescuers will communicate		YES / NO
Trapped/suspended person		YES / NO
Emergency services contacted		YES / NO

FINAL CHECKLIST (to be done immediately before work commences)	
All fall restraint/arrest equipment and anchor points are checked	YES / NO
Harnesses have been checked and fitted correctly	YES / NO
Rescue equipment is set up and in place	YES / NO
First aid procedure is in place	YES / NO
Workers are aware of roles and responsabilities for the rescue	YES / NO

Written by: ..... Authorised by: .....

Signature: ..... Date: ... / ... / 20 Signature: ..... Date: ... / ... / 20

Practical task 5

Part 2 - Gas testing (PC 2.2)

In this task you will use gas testing equipment to test the entrance of a confined space. You will check and calibrate your gas monitor. Test for carbon monoxide and hydrogen sulphide. You will test the oxygen levels, and the flammability range. You will record the test results as you go on your confined space entry permit.

What you need for this task

- Gas testing/monitoring equipment
- Calibration equipment
- Description of work
- Confined space entry permit

	How to do this task	✓
1	Get your personal gas monitor. (see your trainer)	
2	Inspect the gas monitor for faults, battery life, your instructor will show you what to look for.	
3	Calibrate your gas monitor. (see your trainer)	
4	Fill out the details of the gas monitor on your confined space entry permit. Include the ID, battery checks and calibration details.	
5	Move to the work area.	
6	Test the air around the opening of the confined space for gasses. Record the results.	
7	Open the lid/door to the opening. Test the air escaping from the opening for gasses. Record the results.	
8	Correctly apply tagging and lock-out procedures	
	When your trainer says to do so:	
9	Test the air at the top, bottom and middle of the space.	
10	Record the results.	
11	Discuss the gas tests with your group and your trainer.	

Confined Space Entry Permit

Number: 110012

Location of Work:	Type of Work: .....
.....	.....
.....	.....
Site / Hatch / Area ID:	.....
Work Is Authorised for: Date: Time:	Authorised by: Signed: Date: / /

PEOPLE AUTHORISED TO ENTER CONFINED SPACE	Trained	Entry		Exit	
		Time	Signed	Time	Signed
(Person In Control)	☐	:		:	
(Standby Person)	☐	:		:	
	☐	:		:	
	☐	:		:	
	☐	:		:	

EXPECTED HAZARDS OF SPACE			
☐ Unsafe oxygen levels	☐ Risk of engulfment	☐ Fumes or gasses	☐ Explosive environment
☐ Slips / Trips / Falls	☐ Heat / Cold	☐ Airborne Contaminants	☐ Manual handling
☐ Biohazards	☐ Mechanical / Electrical	☐ Poor lighting	☐ Steam / Water / Gas
Other:		☐ Noise levels	☐ Hot work

VENTILATION METHOD	☐ Natural	☐ Purging	☐ Inerting	☐ Other	Details:

(P.P.E.) REQUIRED			
☐ Protective Clothing	☐ Hearing Protection	☐ Safety Glasses	☐ Gloves
☐ Safety Helmet	☐ Harness/Lifeline	☐ Suitable Footware	☐ Breathing Apparatus
	Other:		

ISOLATION REQUIRED FROM	Needed	Initial	Time	ISOLATION REQUIRED FROM	Needed	Initial	Time
Water / Gas / Steam				Mechanical / Electrical Drives			
Fire Extinguishing Systems				Sludge / Deposits / Wastes			
Chemicals / Substances				Grains / Dust / Chips			
Other:				Other:			
Isolation method:				Locks / Tags fixed to isolation points ☐			

OTHER CHECKS		
BA Required? YES / NO	Hot Work Permit Required? YES / NO	Intrinsically Safe Equipment Needed? YES / NO
Comms Organised? YES / NO	Signs/Barricades Up? YES / NO	Fire Fighting/Protection Equipment Needed? YES / NO
	Rescue Plan Complete? YES / NO	Equipment needed for rescue is available? YES / NO

OTHER CONTROLS	

GAS TESTING REGIME	☐ Before entry	☐ Every _____mins	☐ As required	☐ Continuously

ATMOSPHERE GAS TESTING EQUIPMENT	
ID No.: Calibrated ☐ Battery Charged ☐ Inspected ☐	ID No.: Calibrated ☐ Battery Charged ☐ Inspected ☐
ID No.: Calibrated ☐ Battery Charged ☐ Inspected ☐	ID No.: Calibrated ☐ Battery Charged ☐ Inspected ☐

ATMOSPHERE/ GAS TESTS	Entrance/Exit			Other tests (Should include top centre and bottom of space)						
	Before Opening	Slightly Ajar	Fully Open	1	2	3	4	5	6	7
TIME:	:	:	:	:	:	:	:	:	:	:
% of Oxygen										
% of LEL										
Carbon Monoxide - CO^2										
Hydrogen Sulfide - H^2S										
Other:										
Other:										

EXITING SPACE CHECKLIST			
All persons accounted for ☐	Tools/Equipment Checked ☐	Gas Monitors Checked & Returned ☐	Permit complete ☐
Signed (Person in Control):		Date: Time:	

WORK AND PEOPLE

HAZARDS AND CONTROLS

GAS/ATMOSPHERE TESTING

EXIT

Practical task 6

Enter and work in a confined space (PC 1.6, 1.7, 1.8, 1.9, 2.5, 2.6, 4.1, 4.2, 4.3, 4.4)

This task must be done under the direct supervision of your trainer

In this task you will safely move people, tools and equipment to the work area. You will check your safety systems, and make sure they work and are adjusted properly. Once you have done this you will pack up, clean the work site and properly store all tools and equipment.

What you need for this task

- Completed Emergency Rescue Plan (if connecting to a fall arrest system).
- Completed SWMS or JSEA.
- Completed confined space entry permit.
- Tools and equipment for work (your trainer will supply these). The actual equipment will vary depending on the type of work you are doing.
- Confined spaces equipment. This may be static lines, lanyards, harnesses, inertia reels, energy absorbers and so on (your trainer will advise what is available).

How to do this task			
Item	✓	**Item**	✓
1. Sign onto/receive the work permit		10. Safely move people into the work area. You should take on a range of roles in your team. Each person should get practice at performing the duties of the standby person	
2. Get the tools and equipment you will use ready to move to the work area		11. Move the tools, equipment and people to the work area. Make sure you practice safe manual handling practices	
3. Organise your rescue equipment		12. Check your safety systems. For example, you may need to check your tripod, check tension of the harness or check lifeline, etc	
4. Set up any signs / barricades etc, as needed by the SWMS / JSEA or entry permit		13. Monitor the space for changes that could cause the entry permit to be revoked	
5. Prepare the space for entry. Set up any heating / cooling / ventilation, etc		14. Ensure time frames for working inside the confined space are followed. Seek extension to permit if/when required.	
6. Display the entry permit at the entrance of the space		15. Pack up the work area making sure to account for all tools and equipment taken to the area. Your trainer will tell you the right location for the tools and equipment you are using	
7. Do final checks on entry permit requirements. **If permit requirements are not met you cannot enter the space.** Seek a variation or new permit if required.		16. Inspect your safety equipment (harnesses, gas monitoring equipment, etc.) You may need to charge batteries, clean equipment etc	

Note: This completed document shows that the enclosed learning materials have been mapped against the Unit of Competency.

RIIWHS202E – Enter and work in confined spaces

LEGEND:

PC = Performance Criteria
PE = Performance Evidence
KE = Knowledge Evidence

A. PERFORMANCE CRITERIA

Element 1 - Plan and prepare for working in confined space

Performance Criteria (PC)		Learner Guide & PowerPoint Presentation: Chapter headings	Learner Workbook		Summative Assessments		Other resources
			Knowledge Questions	Practical Tasks	Knowledge assessment	Practical Assessment	Trainer to fill out customised and additional materials, e.g. websites, DVDs, handouts
1.1	Obtain, interpret and confirm work requirements	• Confined Spaces and the law, page 9-10 • Employers / PCBUs. Pages 11-12 • Designers, manufacturers and suppliers. Page 13 • Officers. Page 14 • If you decide a space is a confined space. Page 20 • Site specific forms. Page 51	Q 4, 11, 12, 13, 14, 15, 27	Practical Task 1	Q1, 5, 8	Practical Task 1-A	
1.2	Access, interpret and apply documentation required to enter and work in confined spaces	• If you decide a space is a confined space. Page 20 • Check instructions. Page 34 • Paperwork. Page 35 • Site specific forms. Page 51	Q 5	Practical Task 2, 3	Q 2, 3	Practical Task 1-A	

MAPPING TOOL
RIIWHS202E – Enter and work in confined spaces

Performance Criteria (PC)		Learner Guide & PowerPoint Presentation: Chapter headings	Learner Workbook		Summative Assessments		Other resources
			Knowledge Questions	Practical Tasks	Knowledge assessment	Practical Assessment	Trainer to fill out customised and additional materials, e.g. websites, DVDs, handouts
1.3	Identify and address potential risks, hazards and environmental issues, and implement control measures according to workplace procedures	• Hazards of working in a confined space. Page 22 • Risk control. Page 28 • Controlling the risks. Page 30 • How to remember the hierarchy of risk control. Page 31 • Risk assessment. Page 36 • Reviewing control measures. Page 40 • Hot and cold work. Page 44 • Environmental management plan. Page 45 • Heating or cooling the space. Page 77 • Isolate and lockout. Page 78 • Purging. Page 80 • Natural ventilation. Page 81 • Inerting. Page 82 • Positive pressure ventilation. Page 83 • Ventilating a space containing flammable gasses. Page 84 • Equipment used to purge or ventilate a confined space. Page 87 • Problems with ventilation. Page 88 • Hazards with ventilation. Page 89 • Working in a flammable environment. Page 101	Q 2, 3, 6, 22	Practical Task - Safe work method statement	Q 6, 7, 8, 10, 11, 25, 45, 47	Practical Task 1-A	
1.4	Obtain and confirm authorisation of a confined space entry permit that meets regulatory requirements	• Entry and work permits. Page 37	Q 1, 6, 7, 10, 16	Practical Task 5	Q 1, 11	Practical Task 2-B	