

Procedure

Confined Space Management

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1 Purpose

The intent of this document is to eliminate or minimise the risks of fatalities, injuries and other events arising from Confined Spaces at Seqwater Workplaces.

2 Scope

This procedure applies to all Seqwater Workers (which includes contractors), business groups and work activities at Seqwater Workplaces.

3 Critical Controls

Critical Controls for Confined Space		
	Critical Controls	Objective
1	A safe atmosphere is verified prior to Confined Space entry and continuously monitored with calibrated equipment	To maintain a safe atmosphere in Confined Spaces where Workers are present
2	Isolation of all gases, liquids and solids with potential to enter the Confined Space	To prevent introduction of gases, liquids or solids into Confined Spaces where Workers are present to maintain a safe atmosphere and remove the risk of Engulfment
3	Confined Spaces locked and/or secured against inadvertent or unauthorised entry	To prevent inadvertent / unauthorised entry to Confined Space
4	Emergency Response	To safely and efficiently remove Workers from the Confined Space in the event of an emergency

4 Procedure

4.1 Overview

The Intent of treating a space as a Confined Space is to make certain that we have the appropriate risk controls in place to prevent harm to a person caused by the hazards that could be present or arise while in or near the Confined Space. Confined Spaces pose dangers to people because they are usually not designed to be areas where people work. Confined Spaces often have poor ventilation that allows hazardous atmospheres to quickly develop, especially if the space is small. Confined Space hazards are not always obvious and may change from one entry into the space to the next with the passing of time, as well as the nature of the work being undertaken in the Confined Space.

Risks of working in Confined Spaces include:

- Loss of consciousness, impairment, injury or death due to the immediate effects of Airborne Contaminants
- Fire or explosion from the ignition of flammable Contaminants
- Difficulty rescuing and treating an injured or unconscious person

- Asphyxiation resulting from oxygen deficiency or immersion in a free-flowing material, such as liquids, sand, or water.
- Falls during entry and exit
- Environmental factors (e.g. temperature extremes)
- Poor lighting
- Working at heights due to open covers
- Carrying of equipment in or out of the Confined Space

4.2 Eliminating the need to enter a Confined Space

Alternate work methods should be considered, where practicable, to eliminate the need for a person to enter a Confined Space to undertake an activity.

The following are examples of work methods that eliminate the need to enter Confined Spaces:

- Extending valve spindles or raising valve actuators to the top of valve pits.
- Using remote cameras or a mirror attached to a probe for internal inspection of vessels and pits.
- Using remotely operated rotating flail devices, vibrators or air purge devices to clear blockages in silos.
- Installing fixed or temporary cleaning devices e.g. spray balls using high-pressure hoses inserted through an access hatch to clean the inside of a tank.
- Using a hook, long-handled clasp or magnet on a string to retrieve an object dropped into a Confined Space.

4.3 Fit for work

Due to the nature of the risks associated with work in a Confined Space, all Seqwater employees who are required to enter a Confined Space at a Seqwater Workplace must undertake a Confined Space Medical examination.

Workers with a current Confined Space Medical must notify Seqwater if there is a change in their health status that may impact their ability to safely enter a Confined Space.

If a person fails a medical, a risk assessment will be undertaken to assess if they can perform the duties of the Standby Person.

Refer to the Health Monitoring and Immunisation Procedure ([PRO-00020](#)) for specific requirements.

4.4 Identification of a Confined Space

The identification of a Confined Space is a critical step in the safe management of work at Seqwater Workplaces. Workers must confirm if a space they are intending to enter is, or is not, a Confined Space, before they enter the space.

4.4.1 Methods of identification

At Seqwater Workplaces, Confined Spaces may be identified by one or more of the following:

- A Confined Space sign located at the entrance to the space.
- The space is listed in the Confined Space register for the site.
- The space is assessed by a Worker trained as a member of a Confined Space Entry Team and the outcome is reviewed by a line supervisor who has appropriate knowledge of the site.

Confined Space signage

All identified Confined Spaces at Seqwater Workplaces, where practicable, must have a sign attached to the space in clear view of each entrance point.

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Confined Spaces with entrances in roadways or other areas where a sign would be regularly damaged may not be signed. Alternate methods of identification (i.e. painting) should be investigated for these types of Confined Spaces.

Examples of typical Confined Space signage used at Seqwater is included in Appendix A of this procedure.

Confined Space register

All Confined Spaces identified at Seqwater Workplaces must be recorded on a Confined Space register.

A Confined Space register must be developed for each Seqwater Workplace utilising the Confined Space Register Template ([TEM-00155](#)). The Confined Space register must be stored in REX as a controlled document and be made available at all sign-in facilities for the Workplace.

Confined Space registers must be audited at least every five years or when any significant changes to structures occur at the Workplace or when required by the COP

The audit may be supported by the HSW Team.

Confined Space identification process

Where an Enclosed or Partially Enclosed Space is not signed as a Confined Space and is not listed in the Confined Space register for the site but is suspected of being a Confined Space:

- Only a Worker trained as a member of a Confined Space Entry Team is allowed to complete Part B of the Confined Space Entry Permit (CSEP) ([FRM-00107](#)) to determine whether it is a Confined Space or not.
- The Confined Space identification flowchart is included at Appendix B of this procedure. The flowchart defines a step-by-step process to be implemented when deciding if a space is a Confined Space.

Where a space is deemed a Confined Space:

- The Confined Space entry process defined in section 4.5 of this procedure must be implemented before any Worker enters the space.

Parts A and B of the Confined Space Entry Permit ([FRM-00107](#)) must be recorded in the appropriate system REX.

Where the identification process deems that a space **is not** a Confined Space:

- Approval must be given by a line supervisor who has appropriate knowledge of the space, before any Workers enter the space

Declassification of a Confined Space

Where a Confined Space register audit or other assessment results in a recommendation to de-classify an existing Confined Space, the recommendation must be accompanied by a documented risk assessment that justifies the reasons for the declassification.

Temporary risk control measures such as providing temporary ventilation or achieving a satisfactory pre-entry gas test will not result in a Confined Space being declassified. For a Confined Space to be declassified, it must have undergone sufficient changes in structure and use, to eliminate all inherent hazards that define a Confined Space.

The declassification of any Confined Spaces must be approved by the Manager, HSW and the responsible Level 3 Manager Following declassification, any Confined Space signage must be removed from entrances to the space and the details of the space must be amended in the Confined Space register.

4.5 Confined Space entry process

The Confined Space entry flowchart included in Appendix C defines the process to be implemented when working in Confined Spaces on Seqwater Workplaces. The Permit Issuer must complete Parts A through to Part E of the CSEP and reviewed by an independent second person (Permit Recipient) before then being presented to the Team Supervisor (Permit Authoriser) for authorisation.

The key steps in the Confined Space process are:

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No.	Step
1	Assess if work can be undertaken without entering the Confined Space.
2	Conduct a risk assessment of the inherent hazards of the Confined Space to prepare the space for entry and exit safely using Part C of the Confined Space Entry Permit (FRM-00107). Use the Combined SWMS template (RSK-00481) or SWMS (TEM-00013) to assess the work to be undertaken.
3	Apply physical controls around the space (i.e. barriers, signage, etc.).
4	Isolate the Confined Space where applicable using Isolation Instruction Template (TEM-00077).
5	Prepare the space for entry (i.e. draining, cleaning, ventilation etc.). Use an air flow meter where doubt exists.
6	Prepare access to Confined Space.
7	Confirm the membership of the Confined Space Entry Team
8	Prepare Confined Space entry equipment (i.e. gas detector, tripod, harnesses, Personal Protective Equipment (PPE), etc.).
9	Complete and review the High Risk Work Rescue Plan (TEM-00027).
10	Confirm communications protocols.
11	Confirm emergency procedures
12	Test the atmosphere
13	Complete and activate Confined Space Entry Permit (FRM-00107).
14	Enter the Confined Space.

Once work has commenced in a Confined Space, continual monitoring of the atmosphere must be undertaken to ensure effectiveness, and a Standby Person must monitor work in the space for the duration of the Confined Space entry.

4.6 Preparing a Confined Space for entry

4.6.1 Apply physical controls to work area

Signs and barricades

Before any work in relation to a Confined Space starts, signs must be erected to warn or inform persons not involved in the work against entry to the work area / Confined Space.

Signs must be in place while the Confined Space is accessible, including when preparing to work in the space, during work in the space and when packing up on completion of the work. The signage must be placed at each entrance leading into the Confined Space.

The signage required for managing access to a Confined Space entry work area is shown in Appendix A of this procedure.

Where access cannot be effectively controlled, barricades shall be erected. Signposting alone should not be relied on to prevent unauthorised entry to a potential Confined Space. Security devices, for example locks and fixed barriers should be installed.

Traffic management

Traffic movements in the vicinity of Confined Space activities significantly increase the risks associated with the work. In addition to the risks associated with Workers or equipment being struck by a moving vehicle, exhaust emissions contain hazardous gasses which, if the gasses enter the Confined Space, significantly increase the risk to Workers within the space. Risks associated with vehicle movements must be considered and appropriate risk controls developed and implemented before any Worker enters a Confined Space.

Where a Confined Space is in or adjacent to a roadway, appropriate traffic controls must be developed and implemented by appropriately qualified personnel to prevent vehicles/mobile plant entering the work area.

4.6.2 Isolating the Confined Space

Prior to entering a Confined Space all potential Hazardous Services and sources of energy must be isolated. As per Energy Tag and Lockout Procedure ([PRO-00014](#))

If liquids, gases or vapours have the potential to enter the Confined Space, the pipe work delivering these Contaminants to the Confined Space must be physically isolated. The preferred method for isolating liquids, gasses or vapours at Seqwater Workplaces is through the use of a Double Valve Isolation.

4.6.3 Emptying, cleaning and ventilation

A safe work environment must be established then maintained, to control the risk so far as reasonably practicable, during work in a Confined Space.

Emptying the space

Once the Confined Space is isolated, any material (solid or liquid) remaining in the space that has the potential to re-contaminate the space or to interfere with the work to be undertaken shall be removed by a method that does not require physical entry.

The design and location of the space will dictate the method of emptying the space. Care should be taken to ensure the materials removed from the space are handled and disposed of appropriately.

A space may not need to be completely emptied, provided the materials remaining in the space do not pose a risk to people or equipment that cannot be reliably controlled.

Cleaning the space

The Confined Space should be cleaned prior to entry. The following points should be considered for cleaning a Confined Space. Note, the purpose of cleaning a Confined Space could be to conduct other tasks safely within the Confined Space:

- The method chosen for cleaning must not create additional hazards (i.e. assess the type of material stored in the Confined Space and any potential reactions that may result from the cleaning process).
- Wherever practicable, cleaning must be performed from outside the Confined Space.
- Disposal of Contaminants must be undertaken in a manner that will not cause a hazard to any person, equipment or the environment.
- Cleaning equipment must be designed for the purpose in which it is proposed to be used.
- Safety precautions detailed in safety data sheets and plant safety information should be utilised to define safe cleaning practices.

Ventilating the space

Ventilation of a Confined Space with fresh air, by natural, forced or mechanical means, may be necessary to establish and maintain a safe atmosphere and temperature for as long as anyone is in the Confined Space.

If the Confined Space has sufficient openings, natural ventilation may be adequate, however in some cases mechanical ventilation is likely to be needed.

When using mechanical ventilation, consideration must be given to where the fresh air is drawn from and where the exhaust air is finally vented to, so that the fresh air is not contaminated either by exhaust air or by other pollutants, and the exhaust air does not cause other risks.

Mechanical ventilation may be used in either an induced draft or forced draft application. Induced draft is used to lift heavier than air Contaminants out of a space, whereas forced draft can be used to give a fresh air flow down into a space. Sometimes both may be required. Note measures must be taken to avoid "short circuiting". LEV is

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effective where the source of Contaminant generation is localised, the extraction point can be located close to the source and adequate make-up air is available (for example, capture or extraction of welding fume).

Where dilution ventilation is used, air needs to be introduced in a way that will ensure effective circulation throughout the Confined Space, taking account of the configuration of the space, the position of the openings and the properties of the Contaminants. During operations likely to generate Contaminants, mechanical ventilation equipment must be adequate or sufficiently reliable to maintain Contaminants at acceptable levels and to ensure a Safe Oxygen Level.

Where mechanical ventilation equipment is likely to be necessary to maintain acceptable Contaminant levels in a Confined Space, the equipment must:

- Be monitored to ensure continuous operation while the Confined Space is occupied
- Have the controls (including any remote power supply) clearly identified, tagged and protected to guard against unauthorised interference.

Air Change Calculation

Calculations should be performed where doubt exists as to the effectiveness of the ventilation to see if sufficient air changes within the Confined Space are being achieved.

Ambient temperatures and airborne atmospheric Contaminant loading will govern what is perceived as an adequate number of air changes per hour.

Values	Descriptions
N	Number of Air Changes per hour
Q	ventilation rate (m ³ /h) from fan specifications
V	volume of space (m ³)
Formula	$N = Q/V$
Calculation Example	If a Confined Space volume was 200 m ³ and the ventilation fan had a rate of 4000 m ³ /h then: $20 = 4000/200$ i.e. 20 air changes per hour.

4.7 Establishing access points

Access points that will be used to enter a Confined Space must be identified and any preparation work undertaken to enable safe entry/exit to the space and documented in the High Risk Rescue Plan.

The following features must be considered:

- Access points must be large enough to allow people wearing the necessary PPE and equipment to pass through and to allow the rescue of all people who may enter the Confined Space.
- Where possible fixed ladders or platforms within the Confined Space should be visually inspected (from outside the space) for signs of deterioration.
- Temporary access ladders must be appropriately installed and secured.
- Access points must be unobstructed by fittings or equipment that could impede rescue and must also be kept free of any obstructions during work in the Confined Space. If equipment such as electrical cables, leads, hoses and ventilation ducts are required to pass through an access hole, a second access point may be needed.
- Signs and, if necessary, barricades must be installed at access points for the duration of the work.

4.8 Confirming a Confined Space Entry Team

A Confined Space Entry Team must include a minimum of three Workers, consisting of:

- a Permit Issuer / Rescue Person

- a Permit Recipient / Standby Person
- an Entrant

The roles can interchange if required, an appropriate role handover must occur by agreement between the entry team. At all times, at least two members of a Confined Space Entry Team must be outside of the Confined Space and engaged with the task. This is to ensure that should an incident occur while a team member is in the Confined Space, there is one team member (Standby Person) capable of being in continuous communication with the person/s, while another team member is able to initiate emergency procedures as detailed in the high risk rescue plan. A Standby Person must never enter the Confined Space.

Each member of the Confined Space Entry Team must have completed training in the role that they are performing. Training requirements are defined in section 7 of this procedure.

The Confined Space Entry Team may be expanded to include additional Standby or entrant personnel based on the work to be undertaken and the outcome of the Confined Space risk assessment all Workers (Entrants) entering the Confined Space must sign onto the Confined Space Entry Permit (FRM-00107) prior to entry.

Where a Confined Space entry is being undertaken for the purposes of undertaking an asset inspection or condition assessment (i.e. no work is being undertaken in the Confined Space), the Worker undertaking the asset inspection or condition assessment is not considered to be part of the Confined Space Entry Team who are managing the entry to the space. In these situations the Worker undertaking the asset inspection or condition assessment must:

- follow the directions of the Confined Space Entry Team at all times when inside the Confined Space
- have successfully completed an online training course.

4.9 Preparation of access equipment and PPE

Equipment to be used to enter the Confined Space must be inspected and, where required, have a current test tag attached. All Workers involved in Confined Space work must be supplied with, and trained in, the use of appropriate Confined Space access equipment and PPE for the task to be undertaken.

When selecting Confined Space access equipment and PPE for entering a Confined Space, the following must be taken into account:

- The work to be undertaken (if any).
- The conditions within the space (i.e. wet, slippery, hot)
- The size and location of entry/exit points
- The impacts PPE may have on work in the space and rescue from the space
- The number of Workers entering the Confined Space.

4.10 Emergency procedures (High Risk Rescue Plan)

Confined Space incidents and emergencies must be escalated in accordance with the Emergency Preparedness and Response Procedure ([ERP-00079](#)).

When establishing emergency procedures for Confined Space rescue, the following factors must be taken into account:

- The nature of the Confined Space.
- The location of the Confined Space.
- Communications from within the Confined Space to the Standby Person
- Communications from the location of the work to emergency services and protocols for raising of alarm.
- Changes in oxygen levels or concentration of Airborne Contaminants.
- Rescue and resuscitation equipment and the availability of trained Workers.

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- The physical capabilities of rescuers and the training and competency of rescuers.
- Environmental conditions.
- Appropriate first aid equipment and the availability of trained Workers.
- The ability for local emergency services to respond and provide assistance in emergency situations.

Where practicable, a rescue should be performed from outside the Confined Space. If safe to enter, the rescuer may enter the space to perform first aid.

All Workers involved in Confined Space work will be supplied with, and trained in the use of, appropriate emergency and rescue equipment, including:

- Rescue tripod, davit, crane jib or fixed anchor point
- Air-supplied respiratory protective equipment (if unsafe oxygen or Airborne Contaminant levels)
- Retrieval devices – winches or rope systems
- Fall arrestors
- Gas detection equipment
- Suitably safe lighting
- Life lines
- First aid equipment
- Effective communications equipment

A High Risk Work Rescue Plan ([TEM-00027](#)) must be developed and reviewed with the Confined Space Entry Team to ensure its relevance and effectiveness prior to any entry to a Confined Space. A Confined Space entry trained Worker must develop the plan using the High Risk Work Rescue Plan Template ([TEM-00027](#)).

All participants in the Confined Space entry must be briefed on the requirements of the High Risk Work Rescue Plan ([TEM-00027](#)) and know their role should an emergency situation occur.

Openings for entry and exit must be of a sufficient size to allow emergency access, openings are not obstructed, and any plant, equipment and personal protective equipment (PPE) provided for first aid or emergency rescue are maintained in good working order. Potential problems with the size of entrance and exit points must be addressed when developing a High Risk Work Rescue Plan ([TEM-00027](#)). When assessing openings, consideration should be given to moving through the opening whilst wearing PPE. Where openings are found to be inadequate, their size must be increased (e.g. by removing mesh panels covering a pit), or an alternative safe means of entry and exit must be provided.

4.11 Communication and monitoring procedures

In preparation for Confined Space entry, the Permit Issuer must assign a Standby Person to continuously monitor the wellbeing of those inside the space. If practicable, the Standby Person should observe the work being carried out and to initiate emergency procedures when necessary.

The Standby Person must never leave the Confined Space entry point under any circumstances whilst Workers are in the space.

A communication system must be confirmed prior to entering the Confined Space to ensure continuous communication between people inside and outside the Confined Space and to summon help in an emergency. Depending on the conditions within the Confined Space, communication can be achieved by voice, radio, phone, hand signals or other suitable methods.

In providing communication and ongoing monitoring, the Standby Person should:

- Understand the nature of the hazards inside the particular Confined Space and be able to recognise that the Workers in the space are showing unusual signs or symptoms in their behaviour or movement

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- Remain outside the Confined Space and do no other work which may interfere with their primary role of monitoring the Workers inside the space
- Have all required rescue equipment (e.g. safety harnesses, lifting equipment, a lifeline) set up to allow for a rehearsal of the rescue plan
- Have the authority to order Workers to exit the space if any hazardous situation arises
- Activate the High Risk Work Rescue Plan ([TEM-00027](#)) if required.

The Standby Person must never enter the Confined Space to undertake a rescue.

4.12 Atmospheric Testing and monitoring

A safe atmosphere must be maintained for the duration of work in a Confined Space.

A safe atmosphere in a Confined Space is one that:

- Has a Safe Oxygen Level (concentration of oxygen of between 19.5% - 23.5%)
- Is free of Airborne Contaminants or any Airborne Contaminants are below their allowable exposure standard (if any)
- Has any flammable gas or vapour in the atmosphere at concentrations below 5% of its Lower Explosive Limit (LEL).

The process for undertaking Atmospheric Testing of a Confined Space is defined in the flowchart included as Appendix D of this procedure.

Any air monitoring in a Confined Space should be carried out by a competent person using a suitable, correctly calibrated gas detector. You must ensure that while work is being carried out in a Confined Space to test the atmosphere for:

- oxygen content;
- airborne concentration of flammable Contaminants; and
- airborne concentration of potentially harmful Contaminants (for example hydrogen sulphide and carbon monoxide).

Initial testing should be done from outside the Confined Space by inserting a sample probe and/or portable gas detection device at appropriately selected access holes, nozzles and openings. Because Contaminants can settle at different levels, each part of the Confined Space should be tested—side to side and top to bottom.

4.12.1 Pre-entry Atmospheric Testing (from outside space)

Atmospheric Testing must be undertaken prior to entry or re-entry of any Confined Space. Atmospheric Testing must be undertaken by a Worker trained as a member of a Confined Space Entry Team

The atmosphere within a Confined Space must be sampled at one metre intervals for the full depth of the Confined Space to ensure that all strata within the space are tested. Sufficient time must be allowed for an electronic gas detector to sample the atmosphere effectively prior to entry.

As a minimum, the atmosphere must be tested for:

- Oxygen concentration
- Hydrogen sulphide
- Carbon monoxide
- Combustible/explosive elements (methane)

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The following table defines the safe levels of each element that must be attained prior to entry to a Confined Space.

	Combustible/ Explosive (LEL)	Oxygen (O ₂)	Hydrogen Sulphide (H ₂ S)	Carbon Monoxide (CO)
Safe atmosphere	<5% LEL	>19.5 up to <23.5%	<10 ppm	<30 ppm

The atmosphere inside a Confined Space may need to be tested for additional elements depending on what is normally stored or introduced within the space. Testing may be required for ammonia gas, chlorine gas, carbon dioxide, etc.

Normal entry to a Confined Space must only be undertaken when Atmospheric Testing of the Confined Space shows that the atmosphere is safe.

4.12.2 Pre-entry Atmospheric Testing (from inside space)

Where entry into a Confined Space is required to perform Atmospheric Testing, the following must be undertaken:

- Adequate cleaning, purging and/or ventilation prior to entry.
- A Confined Space Entry Permit ([FRM-00107](#)) is completed to undertake the testing. Separate to the work task's CSEP.
- A High Risk Work Rescue Plan ([TEM-00027](#)) must be developed and reviewed with the Confined Space entry work team prior to entry.
- A plan for how and where the testing is to be undertaken must be completed and documented on the Confined Space entry permit.
- Appropriate PPE must be worn for the duration of the entry.
- Only a Confined Space entry trained Worker can enter the space to undertake the testing.
- Only a Confined Space entry trained Worker can act as the Standby Person during the testing.
- If Atmospheric Testing indicates that safe atmospheric conditions have not been reached, additional cleaning, purging and/or ventilation must be undertaken and the atmosphere re-tested.

All Atmospheric Testing results must be recorded on the Confined Space Entry Permit ([FRM-00107](#)) prior to entry and re-entry of a Confined Space.

4.12.3 Atmospheric Monitoring during occupation of Confined Space

Continuous Atmospheric Monitoring must be carried out during occupancy of the Confined Space.

The atmosphere inside a Confined Space may need to be tested for additional elements depending on what is normally stored or introduced within the space. Testing may be required for ammonia gas, chlorine gas, carbon dioxide, etc.

Should Atmospheric Testing indicate an unsafe atmosphere during occupancy, the Confined Space must be immediately evacuated and the incident reported to the Seqwater Incident Hotline (07) 3270 4040.

4.12.4 Entry to a Confined Space with an unsafe atmosphere

Seqwater Workers are prohibited from entering a Confined Space where a safe atmosphere is unable to be achieved.

If a safe atmosphere cannot be achieved, notify the relevant manager and the Manager, HSW to determine how to proceed with the Confined Space entry in this instance. Specialist contractors must be engaged to undertake work in a Confined Space with an unsafe atmosphere.

4.12.5 Atmospheric Testing equipment

Atmospheric Testing must be carried out with an approved gas monitoring device (compliant with AS/NZS 60079.29.2 Explosive atmospheres - Gas detectors - Selection, installation, use and maintenance of *detectors for*

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flammable gases and oxygen). Atmospheric Testing equipment must be used and maintained in accordance with manufacturers requirements and must have a current calibration sticker visible on the device.

All Atmospheric Testing equipment, batteries etc. are to be inspected prior to use and verified as being appropriately calibrated and fit for use. This may involve a verification of the last calibration date, battery check, zeroing of the device, Bump Test of the device, etc.

Atmospheric Testing equipment must only be used by a trained Worker. Sampling equipment numbers, placement or wearing to be determined through risk assessment

Atmospheric Testing equipment must be configured to the alarm settings defined in the following table:

	Combustible/ Explosive (LEL)	Oxygen (O ₂)	Hydrogen Sulphide (H ₂ S)	Carbon Monoxide (CO)
Fresh air reading	0% LEL	20.9% (typical)	0 ppm	0 ppm
Low	5%	19.5%	10 ppm	25 ppm
High	10%	23.5%	15 ppm	200 ppm
Short Term Exposure Limit 15 min (STEL)	-	-	15 ppm	50 ppm
Time Weighted Average 8 hr (TWA)	-	-	10 ppm	25 ppm

4.13 Confined Space entry and work management

4.13.1 Confined Space Entry Permit

The Confined Space Entry Permit ([FRM-00107](#)) is a document that is used to record all elements of a Confined Space entry.

A Confined Space Entry Permit ([FRM-00107](#)) must be authorised by the line supervisor before any person enters a Confined Space. Only Workers who have completed Confined Space entry training and permit recipient training are able to authorise a Confined Space Entry Permit ([FRM-00107](#)).

The Confined Space Entry Permit ([FRM-00107](#)) must contain the following information:

- The date, name and location of the Confined Space to be entered.
- The names and signatures of the Confined Space Entry Team i.e. Permit Recipient, Standby Person, Entrant/s.
- The period of time that the permit is in operation, including time required to complete the work being carried out in the Confined Space.
- Risk control measures that must be implemented before work commences, e.g. isolation of plant and services, purging, ventilation, Atmospheric Testing, cleaning and signage.
- Atmospheric test results.
- Risk control measures that must be implemented or continued while work is conducted in the Confined Space e.g. ventilation, continuous monitoring, and personal protective equipment.
- Any equipment to be taken into the Confined Space. Any equipment not listed on the CSEP is excluded and must not be taken into the space.
- No hot work in a Confined Space without a Hot Work Permit (HWP). Anything not explicitly noted on the HWP is not allowed.

The Confined Space Entry Permit ([FRM-00107](#)) and SWMS must be kept at the entrance to the Confined Space for the duration of the work.

All work must stop and entrants must exit the Confined Space and the permit closed if:

- If atmospheric conditions in the space change (i.e. an unsafe atmosphere develops that is not within the scope of the Confined Space risk assessment).

A new Confined Space Entry Permit ([FRM-00107](#)) must be completed and authorised in the following situations:

- If the Permit Authoriser changes or is replaced e.g. shift change.
- When a break in work continuity occurs e.g. work is suspended whilst additional parts or equipment are sourced from another location (note – fatigue and meal breaks are not considered significant breaks in work continuity).
- If changes are made to the work that introduce hazards not addressed by the current entry permit.
- If new risk controls measures are needed to manage the Confined Space risks.

A Confined Space Entry Permit ([FRM-00107](#)) can be used for multiple entries into a space and can be used where there is more than one access point into a single space, provided the entries are all undertaken in a single shift of work.

Only Workers listed on the Confined Space Entry Permit may enter the Confined Space.

The Confined Space Entry Permit must be kept at least until the work to which it relates is completed.

4.13.2 Managing work activities in the Confined Space

All personnel in a Confined Space must be monitored by, and maintain a line of communication with, the Standby Person for the duration of entry.

Work or activities within the Confined Space must be undertaken in accordance with the conditions of the Confined Space Entry Permit ([FRM-00107](#)) and the SWMS. If during the duration of a Confined Space entry the work being undertaken changes, all personnel must exit the space and undertake a risk assessment for the new activities to be undertaken. Re-entry to the space can only occur when all identified risk controls are in place and a new Confined Space Entry Permit ([FRM-00107](#)) issued and the SWMS is amended where required.

A Confined Space entry or work within the space must be stopped and the space evacuated if:

- The atmosphere within the space becomes hazardous (i.e. gas detector alarm triggered)
- The personnel in the space are showing unusual signs or symptoms in their behaviour or movement
- The Standby Person cannot maintain a watch on the space
- There is an emergency outside of the space
- Any adverse conditions not captured in the risk assessment or Confined Space Entry Permit occur.

Tools and equipment used in the Confined Space must be fit for purpose and not introduce new hazards into the space (this may include intrinsically safe torches, lamps, etc.).

Where required, sources of ignition must be excluded from entry to a Confined Space. Where hot work is required in a Confined Space, a Hot Work Permit must be completed and appropriate controls implemented prior to undertaking the hot work in accordance with the Management of Hot Work Procedure ([PRO-00009](#)).

4.13.3 Exit procedure

Upon completion of work in the Confined Space, all plant and equipment must be removed from the Confined Space.

All Workers who entered the Confined Space must sign-off the Confined Space Entry Permit ([FRM-00107](#)) to confirm that they have exited the space.

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The Permit Recipient must only sign-off and de-activate the Confined Space Entry Permit ([FRM-00107](#)).when they have visually confirmed that all persons listed as entering the space have exited the space safely.

At the completion of the Confined Space entry, the following activities must be completed:

- Removal of all tools and equipment from the Confined Space.
- Confirm that all Workers have exited the Confined Space.
- Close the Confined Space Entry Permit ([FRM-00107](#)) after confirmation all Workers out of Confined Space.
- Return asset to service (if required) including de-isolation.

The requirements and processes to be implemented for each of the above steps, is defined in detail in the following sections of this procedure. Documents associated with the Confined Space entry e.g. SWMS Permit must be saved in CIS or REX to meet the Seqwater document retention requirements.

4.14 Reinstatement of the Confined Space

Once all work has been completed in the Confined Space and all Workers, plant and equipment have been removed from the space, the Permit Recipient must notify relevant operational and/or maintenance staff that the work is complete and the Confined Space is ready to be returned to service.

The reinstatement of the Confined Space to service must be undertaken in accordance with the relevant isolation instruction.

4.15 Maintenance of Confined Space entry safety equipment

Maintenance of Confined Space entry safety equipment involves visual checks, inspections, testing of equipment, preventative maintenance and remedial work. Any equipment to be used for the Confined Space entry must be checked prior to use to ensure it is in a good serviceable condition and, where relevant a current test tag attached.

The specific requirements relating to the maintenance of safety equipment can be found in the Safe Work with Plant Procedure ([PRO-00867](#)).

4.16 Designers, manufacturers and suppliers

In the design, manufacture or modification of any plant or structure that includes a Confined Space, the need to enter the Confined Space should be eliminated, or if that is not achievable, minimised.

Specific features that should be considered during the design, manufacture, supply and modification of plant or structures, in relation to Confined Spaces are defined in the following:

- AS 2865 - Confined Spaces
- Workplace Health and Safety Queensland – Confined Spaces Code of Practice 2021

4.17 Consultation

Line Supervisors must consult with Workers who undertake work in Confined Spaces to identify hazards, assess risks and identify risk control measures.

The use of a consultative process will ensure that a range of knowledge and experience is incorporated into the risk assessment process, and that any site specific hazards or risk controls are included in classifying Confined Spaces and in the development of specific Confined Space entry procedures.

Where a contractor is engaged to carry out work on a Seqwater Workplace that contains Confined Spaces, Seqwater must ensure that the contractor is aware of:

- The Confined Spaces located at the site (access to the Confined Space register)
- Their responsibilities in relation to this procedure and in relation to undertaking work in Confined Spaces
- Their responsibilities in relation to other Seqwater procedures i.e. PASS, SWMS, etc.

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5 Definitions

Term	Definitions
Airborne Contaminant	Any contaminant present in the air that may be harmful to persons.
Atmospheric Monitoring	The continuous measurement of oxygen concentration or Airborne Contaminants over an uninterrupted period of time.
Bump Test	The process to confirm that a gas detector is functioning and is capable of responding to gas by exposing the instrument to a concentration of target gas high enough to initiate an alarm situation while the instrument is in operating mode.
Confined Space	means an Enclosed or Partially Enclosed Space that: <ul style="list-style-type: none"> • is not designed or intended to be occupied by a person; and • is, or is designed or intended primarily to be, at normal atmospheric pressure while any person is in the space; and • is, or is likely to be, a risk to health and safety from: <ul style="list-style-type: none"> ○ an atmosphere that does not have a Safe Oxygen Level; or ○ Contaminants, including airborne gases, vapours and dusts, that may cause injury from fire or explosion; or ○ harmful concentrations of any Airborne Contaminants; or Engulfment.
Confined Space Entry Permit (CSEP)	A Confined Space Entry Permit provides a formal check to ensure all elements of a safe system of work are in place before people are allowed to enter the Confined Space. It also provides a means of communication between site management, supervisors and those carrying out the work and ensures that the PCBU has checked and authorised the entry to the Confined Space and it is safe to proceed.
Confined Space Entry Team	The team who will manage and perform the Confined Space entry. As a minimum the team must consist of three Workers. Roles of individual Workers in the team are: <ul style="list-style-type: none"> • a Permit Recipient/Standby Person • a Permit Issuer/Rescue Person • an entrant. All members of the Confined Space Entry Team must be Confined Space entry trained in the role they are performing.
Confined Space Medical	Medical assessment of a Seqwater Worker by a medical practitioner to determine if they are capable of performing work in a Confined Space. (FRM-00670)
Contaminant	Any dust, fume, mist, vapour, biological matter, gas or other substance in liquid or solid form, the presence of which may be harmful to persons.
Double Valve Isolation	The use of two valves, in series, on the same feed-in pipe line to isolate a potential source of Engulfment. A penstock valve or gate valve considered isolation.
Enclosed or Partially Enclosed Space	Enclosed or partially enclosed spaces may include, but are not limited to, the following: <ul style="list-style-type: none"> • valve pits Shafts, ducts and similar structures • pump wells (wet and dry) Process Vessels • water mains (Pipes) Storage Tanks • manholes.

Term	Definitions
Engulfment	The immersion or envelopment of a person by a solid or liquid (e.g. grain, sugar, flour, sand, coal, fertilizer or other substances in a powder or granular form), that is stored within the Confined Space and which may result in asphyxiation. A rising level of liquid in a Confined Space may cause Engulfment through the inability of the person to readily exit the space.
Hazardous Services	A service including electricity, gas, sewer, water main/lines.
Ignition Source	A source that produces spark or heat having the potential to ignite a flammable Contaminant. Any equipment taken into a Confined Space that could cause a source of ignition must be controlled via a Hot Works Permit.
Lower Explosive Limit (LEL)	The concentration of a flammable Contaminant in air below which the propagation of a flame does not occur on contact with an Ignition Source.
Safe Oxygen Level	A concentration of oxygen in the atmosphere having a minimum of 19.5% by volume and a maximum of 23.5% by volume, under normal atmospheric conditions. NOTE: At pressures significantly higher or lower than normal atmospheric pressure, expert advice should be sought.
Standby Person	A trained and competent person whose primary role is monitoring the Workers inside the Confined Space and must not enter the Confined Space.
Worker	A person who carries out work in any capacity for Seqwater including work as an employee, contractor, subcontractor, self-employed person, our Worker, apprentice or trainee, work experience student, employee of a labour hire company placed with a 'host employer' and volunteers.
Workplace	A place where work is carried out for Seqwater and includes any place where a Worker goes, or is likely to be, while at work.

6 Roles and Responsibilities

Role	Responsibility
Manager	<ul style="list-style-type: none"> Provide adequate resources to comply with this procedure. Ensure a current Confined Space register is maintained for every Seqwater Workplace within their area of responsibility.
Line Supervisor	<ul style="list-style-type: none"> Implement a systematic process to identify Confined Spaces on Seqwater Workplaces within their area of responsibility. Communicate, consult, instruct and supervise Workers involved in Confined Space activities. Ensure all Workers involved in Confined Space activities have current and appropriate levels of training. Regularly monitor and review the effectiveness of risk controls and implement corrective actions and treatment plans where required. Report incidents related to Confined Space activities.
Learning Team	<ul style="list-style-type: none"> Develop and implement a training schedule for Confined Space entry and management in accordance with the requirements of this procedure. Develop and maintain a Training Needs Analysis (TNA) which includes training requirements for Confined Space entry and management.

Role	Responsibility
HSW Team	<ul style="list-style-type: none"> • Ensure a systematic process is in place to identify Confined Spaces on Seqwater Workplaces. • Provide advice, procedures, tools and templates to support systematic identification and management of Confined Spaces. • Provide advice on Confined Space training requirements to LOD Unit. • Analyse and report trends associated with Confined Space hazards and incidents. • Complete Workplace monitoring activities to verify the hazard identification and risk management processes associated with Confined Spaces.
Permit Authoriser	<ul style="list-style-type: none"> • Line Supervisor with responsibility of the work team. Checks the contents of the permit and SWMS before authorising the entry to proceed. This could be the coordinator where the supervisor is part of the CS Entry Team.
Permit Issuer/Rescue Person	<ul style="list-style-type: none"> • Responsible for completing the Generic Safe Work Method Statement (SWMS), High Risk Work Rescue Plan (TEM-00027) and Confined Space Entry Permit (FRM-00107). • Also responsible for conducting the planned rescue. • Trained in Rescue in Confined Spaces.
Permit Recipient /Standby Person	<ul style="list-style-type: none"> • Responsible for developing the Safe Work Method Statement (SWMS), High Risk Work Rescue Plan (TEM-00027) and Confined Space Entry Permit (FRM-00107). • Responsible for the safety of Workers undertaking the Confined Space entry and associated work activity. • A Confined Space entry trained Worker assigned to remain on the outside of, and in close proximity to, the Confined Space entrance. They must be capable of being in continuous communication with and, if practical, observing those inside. This is also a requirement in an emergency scenario. A Standby Person must never enter the Confined Space. • Where necessary, the Standby Person may operate and monitor equipment for the safety of personnel in the Confined Space and initiate emergency response. • Ensure equipment to be used for the Confined Space entry is checked prior to use confirming it is in a good condition and in a serviceable condition. • Ensure adequate communication is implemented and is effective with the entrant.

Role	Responsibility
Entrant	<ul style="list-style-type: none"> • Reads, understand and signs onto a SMWS prior to entry. • Implements controls as per the SWMS and Confined Space Entry Permit (FRM-00107). • Supports the development and rehearses the High Risk Work Rescue Plan (TEM-00027) prior to entry. • Ensures equipment to be used for the Confined Space entry is checked prior to use confirming it is in a good and serviceable condition. • Ensures Atmospheric Monitoring is being conducted prior to and during entry. • Ensures adequate communication is implemented and is effective with Standby Person. • Sign onto the Confined Space Entry Permit (FRM-00107) prior to entry. • Signs off from Confined Space Entry Permit (FRM-00107) upon exiting the space.
Workers (including asset inspectors)	<ul style="list-style-type: none"> • Comply with the requirements of the Confined Space Management Procedure (PRO-00443). • Comply with the requirements of the Confined Space Entry Permit (FRM-00107) and the SMWS associated with the activity.
Other (including persons purchasing equipment for a Confined Space, person who designs or lays out work areas that includes a Confined Space)	<ul style="list-style-type: none"> • Comply with the requirements of the Confined Space Management Procedure (PRO-00443).

7 Training requirements

Relevant training, information and instruction will be provided to Workers in accordance with the Training and Competency Management Procedure ([PRO-01574](#)).

Workers and their line supervisors will be provided with the skills and knowledge to understand all hazards, risks and controls associated with working in a Confined Space including selection, fit, use, wearing, testing, storage and maintenance of any PPE, the contents of any Confined Space Entry Permit ([FRM-00107](#)), and the emergency procedures for their protection.

The following table outlines the training requirements for Confined Space work.

Role	Training required	Refresher
Entrant	Confined Space Medical	2 years
	MSMWHS217 Gas test atmospheres	3 years
	MSAMPER200C Work in accordance with an issued permit.	
	MSAPMPER205C Enter Confined Space or RIIWHS202D Enter and work in Confined Spaces	
	HLTAID011 - Provide first aid	Annual
	HLTAID009 - Provide cardiopulmonary resuscitation	
Stand-by Person/Permit Recipient	MSMWHS217 Gas test atmospheres	3 years
	MSAMPER200C Work in accordance with an issued permit	

Role	Training required	Refresher
	MSAPMPER205C Enter Confined Space or RIIWHS202D Enter and work in Confined Spaces	
Permit Issuer/Rescue Person/s	Confined Space Medical	2 years
	Same as entrant plus appropriate training for safe use of the rescue equipment	3 years
Line supervisors of Confined Space Entry Teams	MSMWHS217 Gas Test Atmospheres*	3 years
	Safe Work in Confined Space (RIIOHS202A – Enter and work in Confined Spaces) or MSAPMPER205C Enter Confined Space	
	MSAMPER200C Work in accordance with an issued permit	
Other** – line supervisor/ manager/project manager/ engineers	Confined Space awareness (online training)	3 years
Other** - persons purchasing equipment for a Confined Space, person who designs or lays out work areas that includes a Confined Space	Confined Space awareness (online training)	3 years

*Note – these courses are generally delivered as a block (over 3 days) initially and then as a block (1 day) for an annual refresher.

**Note – this training is only to be used for Workers who enter Confined Spaces on an infrequent basis. These Workers are only authorised to enter into a Confined Space as part of, and under the supervision of, a Confined Space Entry Team.

8 References




8.1 Legislation and other requirements

Description
<i>AS/NZS 2865 Safe working in Confined Space</i>
<i>AS/NZS 60079.29.2 Explosive atmospheres – Gas detectors – Selection, installation, use and maintenance of detectors for flammable gases and oxygen</i>
<i>Confined Spaces Code of Practice 2021</i>
<i>How to Manage Work Health and Safety Risks Code of Practice 2021 (Qld)</i>
<i>Queensland State Archives General Retention and Disposal Schedule for Administrative Records</i>
<i>Work Health and Safety Act 2011 (Qld)</i>
<i>Work Health and Safety Regulation 2011 (Qld)</i>
<i>Workplace Exposure Standard for Airborne Contaminants</i>

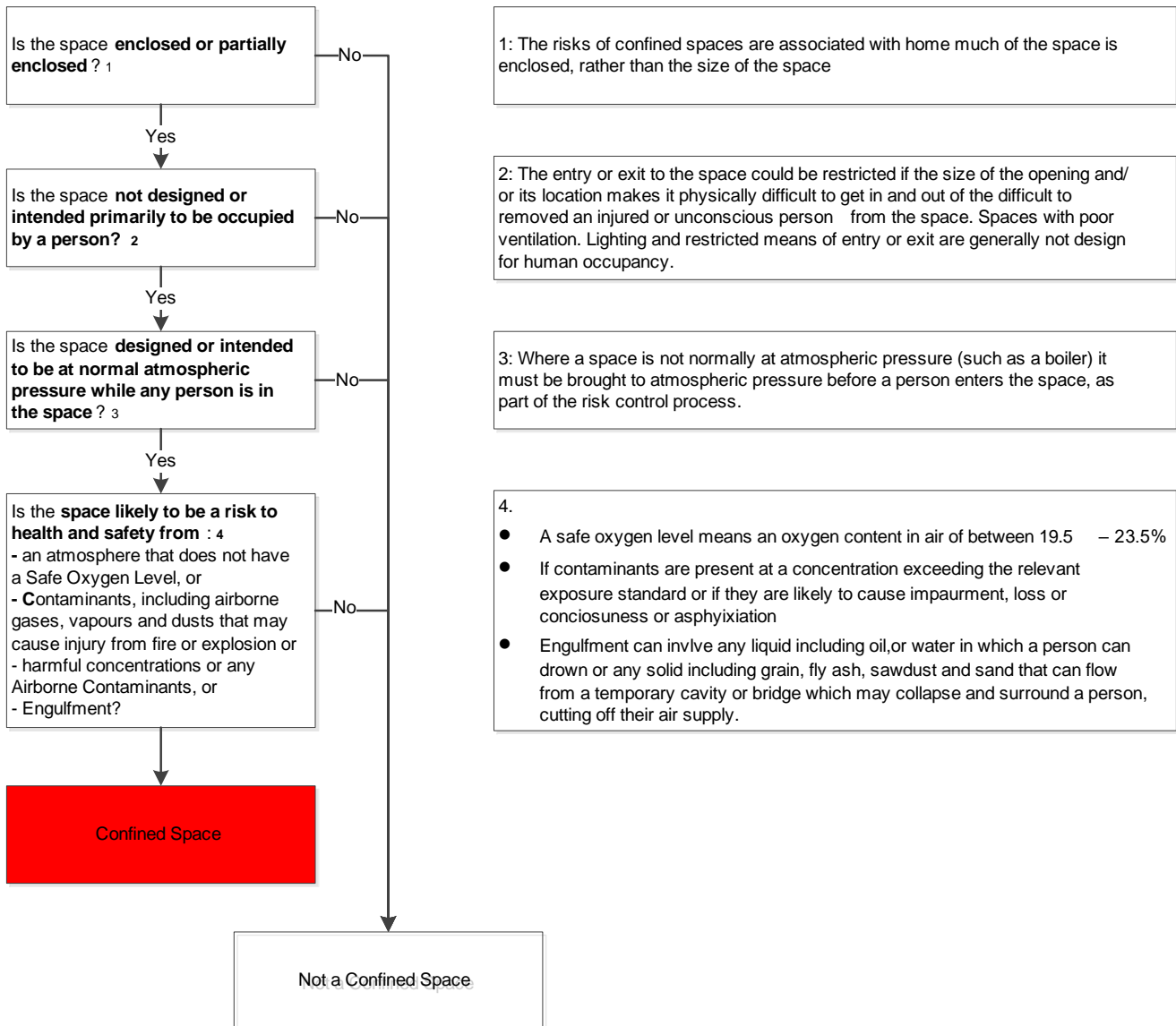
8.2 Supporting Procedures, document, forms, checklist

HSW Procedures	HSW Other documents	Other Documents
PRO-00014 Energy Tag and Lockout Procedure PRO-00020 Health Monitoring and Immunisation Procedure PRO-00009 Management of Hot Work Procedure PRO-00867 Safe Work with Plant Procedure ERP-00079 Emergency Preparedness and Response Procedure PRO-00657 Hazarth Identification and Risk Management Procedure	FRA-00018 HSW Management System Framework Confined Space Entry Permit (FRM-00107) Confined Space Register Template (TEM-00155) High Risk Work Rescue Plan (TEM-00027) Corporate Safety – Take 5 Isolation Instruction Template (TEM-00077) SWMS Template (TEM-00013)	PRO-00002 Integrated Management System Internal Audit Procedure

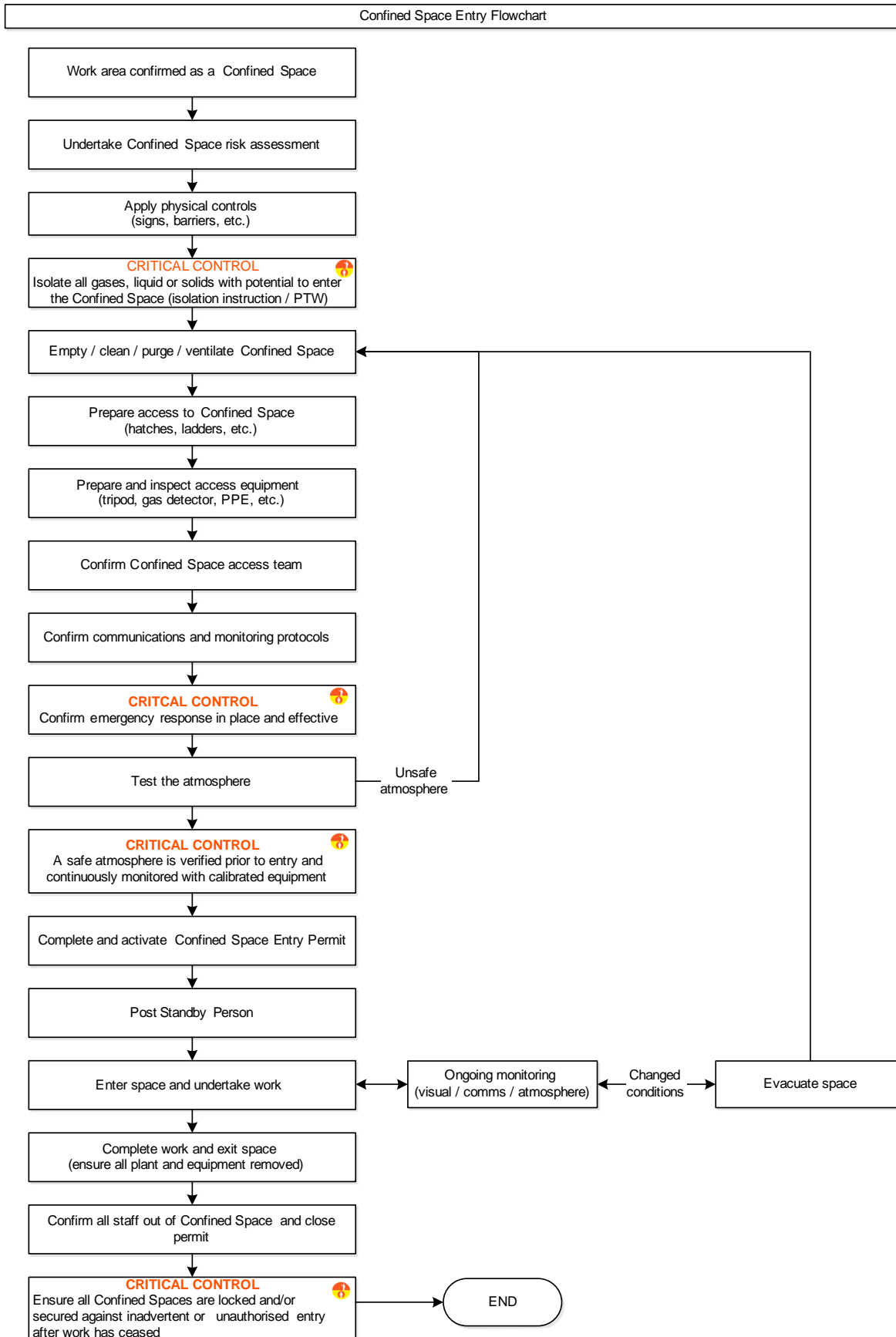
Appendix A – Confined Space signs

Description	Status
<p>Small metal identification sign</p>	<div style="display: flex; align-items: center; justify-content: space-around;"> <div style="text-align: center;">  <p>12.5cm</p> </div> <div style="text-align: center;">  <p>9cm</p> </div> </div>
<p>Large Plastic Sign</p>	<p>Show sandwich boards here</p> <div style="text-align: center;">  </div>

Appendix B – Confined Space Identification flow chart



Appendix C – Confined Space entry flow chart (non-CSPC)



Appendix D – Confined Space Atmospheric Testing flow chart

Atmospheric testing / monitoring flowchart

