

HSP0001 Confined Space Safety

1. Overview

1.1. Objective

To help eliminate or control the risk for anyone who enters or works in or on confined spaces for Sydney Water, as required by the *Work Health and Safety Regulation 2011*.

1.2. Scope

This procedure applies to people who design, build, purchase and manage confined spaces for Sydney Water. It also applies to people who work in or on them, and their responsible managers.

People who do HIDRA, emergency response plans; and inspection, testing and monitoring, are the target audience for implementing this procedure.

1.3. Summary

People planning confined space work must consult people that it will affect.

Responsible managers of assets must ensure confined spaces under their control are identified. Asset designers must identify confined spaces at the design stage.

All people involved must identify confined space hazards.

Responsible managers of confined space work (CSW) must ensure competent people assess risks, and try to eliminate entry through new work methods or technology.

Asset designers must determine if entry can be eliminated through design.

If entry is unavoidable, controls must be applied, such as:

- Isolation or control of hydraulic assets and hazardous plant and equipment.
- Ventilation, and air quality testing and monitoring of the confined space.
- Enough standby person(s) to assist and maintain continuous contact with the people inside and the responsible person for entry.
- Protective barriers and signs to prevent unauthorised entry.
- A task specific emergency response plan (ERP) established and rehearsed.
- A written entry permit approved by the responsible person for entry.

People must be trained to do their relevant confined space tasks.

Risk control procedures and emergency response plans must be documented and communicated to people that they affect.

There must be inspection, testing and monitoring (ITM) of confined space items relating to the worksite, work methods, plant and equipment, and peoples health.

Incidents and non-conformances must be reported and addressed by corrective action.

Relevant confined space records must be kept.

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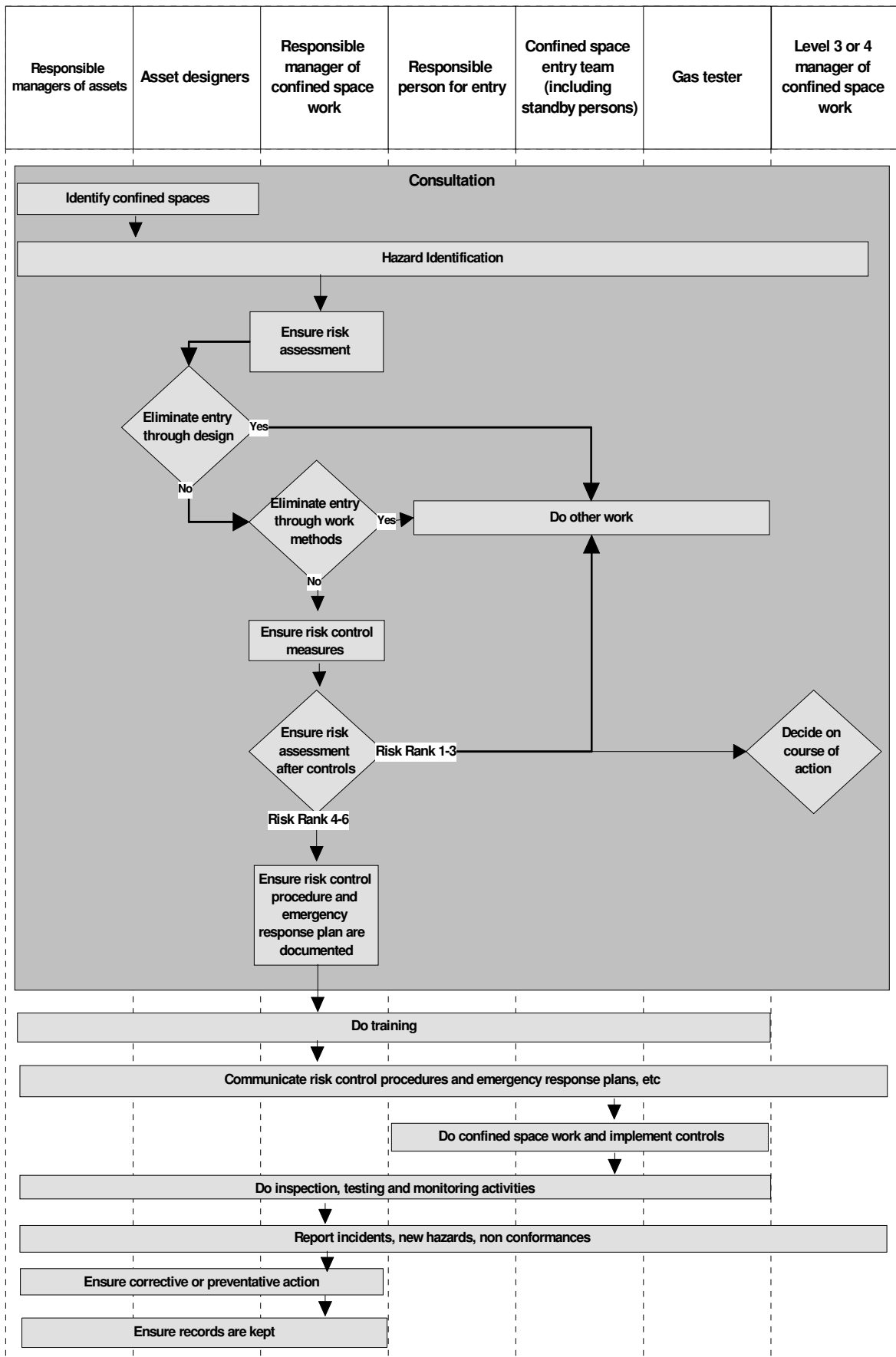
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2. Procedure



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2.1. Consultation Refer to *HSP-011 Consultation & Communication*

Responsible managers of assets, and asset designers must consult people affected by confined spaces that have been identified.

Responsible managers of confined space work must ensure people are consulted when doing: hazard identification, risk assessment, eliminating entry through work methods or technologies, risk control measures and procedures, and emergency response plans.

Asset designers must consult people affected by eliminating entry through design.

Affected people must take part in the agreed consultative arrangements.

2.2. Confined space identification

2.2.1 Designated confined spaces

The following asset types are generally identified as confined spaces:

- Traversable sewers, siphons and combined sewer /stormwater systems, and sewage pumping station (SPS) wet wells.
- Treatment process tanks and conduits, including enterable grease traps.
- Traversable water mains.
- Enclosed water distribution reservoirs.
- Storage tanks of any kind, including enclosed containment and retention devices.

2.2.2 Possible confined spaces

Responsible managers of assets must use the definition in section 3.1 to determine if the following assets under their area of control are also confined spaces:

- Traversable enclosed stormwater drains and pits, and stormwater quality improvement devices (SQIDS).
- Water pumping stations, access chambers, and valve chambers.
- Sewage pumping station (SPS) dry machinery wells.
- Parts of treatment plants that are not tanks or conduits.
- Enterable vent shafts.
- Building and roof cavities, including grease trap rooms.
- Chlorination facilities, chemical and solvent stores.
- Assets not designed as confined spaces but may inherit confined space conditions.
- Excavations and assets under construction, including: trenches, boreholes, tunnels, pits, caissons and cofferdams.
- Plant when it is purchased or hired, such as hull compartments and engine bays in boats and barges.

Asset designers must identify confined spaces at the design stage.

2.3. Hazard identification & risk assessment (HIDRA) Refer to *HSP-014 HIDRA*

2.3.1 Hazard identification

All people involved must help identify hazards for the work to be done in or on the confined spaces that their teams enter. Consider the following types of hazards:

- Those due to the use of the confined space, such as: water, sewage, stormwater, recycled water, flammable gas, air quality hazards, chemicals and trade waste.
- Associated plant, such as: pumps, valves, mixers, and chemical dosing units.
- Asset design and structural hazards, such as: narrow pipes and awkward access.
- Nearby hazards, such as: water or gas mains, large water storages, vapours from fuel or chemical facilities, engine exhaust, traffic, contaminated land, other construction or maintenance work, stormwater runoff, groundwater infiltration or tidal ingress.
- Task or site related hazards that may exist for any work, such as: hot work, hot and cold environments, noise, electricity, manual handling, excavation, working at height, asbestos, poor lighting; working in, near or over water.

Responsible managers of CSW must ensure that HIDRA is recorded. The HIDRA template on iConnect can be used for this. Attachment 1 is an example of it filled out.

2.3.2 Risk assessment

Responsible managers of CSW must ensure a competent person assesses the risk of all identified hazards, before and after controls are nominated.

Entry is not permitted unless the HIDRA risk rank after controls is in the range 4-6. It is most likely that a combination of controls will be required to achieve this.

A risk rank after controls of 1-2 must be reported to the relevant level 3 manager of the confined space entry team, and a risk rank of 3 to the relevant level 4 manager.

Examples of factors that may determine the risk rank include:

- The work area, for instance: the risk of hydrogen sulphide gas may be higher in a SPS wet well than a dry well.
- Task related hazards have higher risks in a confined space, such as: entrapment for divers, flow if working in water, fumes or smoke from hot work, vapours from painting or cleaning, noise from ventilation fans or tools, and heat or entrapment by plant.
- The design of the confined space. A deep access chamber may have higher risks than a shallow one, or a narrow pipe may have higher risks than a wide pipe.
- The distance between access points. The longer the distance, the higher the risk.
- Work inside might have higher risks if there is also work being done on the outside.
- The amount of natural ventilation available. Less ventilation is a higher risk.
- System demand. Peak demand creates a higher risk of flooding than off peak, or the risk of exposure to trade waste may be higher on weekdays than weekends.
- The risk of flooding in a stormwater or sewer pipe, or an asset located in a flood zone, is higher if there is rainfall in its stormwater catchment.
- Unrelated activity nearby, such as: excavation causing a water or gas main break, or vapours entering the confined space from fuel transfer facilities.
- Confined space work on a boat has higher risks in open water than in sheltered water.

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2.4. Eliminate the need to work in a confined space

2.4.1 Asset design

Asset designers must determine if the need for entry can be eliminated when assets are designed or modified. Refer to *HSP-058 Risk Assessment in Design* for instruction and *AS 2865 Confined Spaces* for guidance.

2.4.2 New work methods or technologies

Responsible managers of CSW must determine if the need for entry can be eliminated using new work methods or technologies, such as closed circuit television. Refer to *AS 2865* for guidance.

2.5. Risk control measures

2.5.1 Entry to work in or on a confined space

Responsible managers of CSW (unless otherwise stated) must ensure the following controls are implemented where relevant, if risks can't be eliminated.

Controls must be documented in a risk control procedure (unless otherwise stated) with controls relevant to a specific entry on an entry permit.

For traversing, a traverse plan must be prepared and signed off by the responsible manager for the traverse. Refer to *HSG-541 Sample Traverse Plan Shell* to do this.

The responsible person for entry must not permit entry until relevant controls are confirmed to be implemented.

2.5.2 Isolation or control of potentially hazardous services

Hydraulic isolation

Isolate water that may cause a risk to people inside the confined space. Follow the relevant: water, wastewater, stormwater or treatment plant isolation procedure in *HSP-070 Flow Management and Isolation of Hydraulic Assets (FMIHA)*.

Entry into a confined space hydraulic asset is not permitted until the responsible person for isolation has confirmed isolation. The relevant area manager or team leader as required by *HSP-070* must also approve it.

The responsible person for recommissioning must not commence recommissioning until the responsible person for entry cancels the entry permit.

Flow management

If hydraulic isolation is not possible, a flow management plan must be implemented, following the relevant procedure in *HSP-070*.

Entry is not permitted until the relevant area manager or team leader as required by *HSP-070* approves the plan.

Hydrographic monitoring

Where relevant: flow, depth, rainfall, detention time, tide and peak system flow must be monitored and limits to work set, when people are in hydraulic assets.

When working up or down stream of storages such as SPSs, ensure they are monitored to warn of power or equipment failure, which may cause flow to enter the work area.

The Integrated, Instrumentation, Control, Automation and Telemetry System (IICATS) should be used to get information about flow when planning sewer work.

It can also be used to send hazard alarms to the responsible person for entry.

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Mechanical or electrical plant and equipment

Isolate any electrical or mechanical plant and equipment that may create a risk to persons inside. Examples include: pumps, mixers, switch rooms and carbon dioxide fire suppression systems.

Entry is not permitted until the responsible person for isolation as described in *HSP-049 Lock Out Tag Out (LOTO)* has confirmed it is locked and tagged out.

The responsible person for recommissioning must not commence recommissioning until the responsible person for entry cancels the entry permit.

Chemical dosing units that dose into access chambers must be isolated, if work is to be done in or near the chamber.

Trade waste discharge

For sewer work, check the Hydra GIS to see if there are any discharge hazards nearby.

Refer to the *SPS Trade Waste Classification Register* and/or contact the trade waste officer for the relevant system to find out if there are any 'significant skin contact' or 'significant air quality' hazards.

At sewage pumping stations, check the site hazard information and follow the controls for any trade waste discharge that's identified.

Refer to section 2.55 for specialist gas testing requirements at sites with significant trade waste air quality hazards.

For sewers downstream of a hospital with a nuclear medicine unit, only work downstream of where the radiation dilution zone ends, as labelled in the Hydra GIS. Refer to *HSG-552 Control of Exposure to Ionising Radiation* for guidance.

If entry is unavoidable and trade waste discharge is required to be isolated before entry, arrange this with the trade waste officer. Alternatively, avoid entry when discharge is occurring, if directed by the trade waste officer or the site hazard information.

2.5.3 Purging before entry

Chemical dosing

In larger sewers, chemical dosing can be used to control hydrogen sulphide gas as long as the pH of the sewage stays between 6-8 while the sewer is occupied, and a safe level of dilution is determined based on the flow volume. Refer to *HSG-553 Safe Systems of Work for Sewage Facilities Near Chemical Dosing Units* for guidance

Check the Hydra GIS for the location of the chemical dosing unit and contact the relevant waste water system operations officer to arrange a safe level of dosing.

Cleaning

Chemical storage tanks must be cleaned before entry by a method recommended by the tank manufacturer.

Access chambers or SPS wet wells identified in the Hydra GIS as having a discharge hazard or chemical dosing point, may need to be washed down before entry.

Grease traps must be pumped out before entry.

Treatment process vessels, such as: digesters and grease traps must be cleaned if it improves hygiene and ease of movement. Refer to *AS / NZS Handbook HSB 213 Guidelines for safe working in a confined space* for guidance.

2.5.4 Safety of atmosphere

Natural ventilation

Asset designers must plan natural ventilation into new sewers to minimise gas build up.

Mechanical ventilation

Control air quality hazards by forced ventilation, in the following instances:

- Sewer traversing.
- Work in sewer access chambers.
- Work in sewage pumping station wet wells.
- Stormwater traversing when there is no natural ventilation.
- Any work where air quality hazards (*except oxygen rich air or ionising radiation) are outside the limits in *HSG0512 Confined Space Ventilation and Air Quality Monitoring*.
- Where there is a risk of high temperature and humidity.

Ventilate **before entry** until the air quality is within the limits in *HSG0512*. Continue until all persons have exited.

Entry is not permitted until the gas tester confirms that air quality is within the safe limits.

** Forced ventilation is not a recognised control for oxygen rich air or ionising radiation.*

Mechanical extraction

Mechanical extraction must be used if there is no forced ventilation and the work could generate or release fumes, smoke or vapours, such as: welding, painting or cleaning.

Ensure flammable gases are below 5% of their lower explosive limit (LEL) to do this.

Hot work

Hot work in or on a confined space must be done according to an approved hot work permit. Follow *HSP-026 Control of Hot Work* to do this.

Hot work **in or on** a confined space that is a zone 0 flammable gas hazard (FGH) area is not permitted. It must comply with *HSP-026* to be done **in or on** a zone 1 or zone 2 area.

Maintain a tidy work area and remove combustible materials if doing hot work.

Hazardous plant or processes

The following specific hazards are not permitted in a confined space:

- Ignition sources inside or within 3 m of an opening, until flammable gas has been proved safe by air quality testing. This includes any powered plant, as well as: flames, hand tools, power tools, and non-intrinsically safe: lights, radios and phones.
- Liquid oxygen or hydrogen peroxide dosing of a sewer when people are inside. This is to help control the risk of explosion from an oxygen rich atmosphere.
- Gas cylinders (except those used for self-contained breathing apparatus).

Ensure that nearby vehicles or plant, such as: a generator used to power ventilation fans, is positioned so that exhaust or vapours can't enter the confined space.

Hazardous atmosphere warning signs

A warning sign must be displayed if air quality hazards are not within the safe limits in *HSG-512*. For example: 'Danger - Confined Space - Hazardous Atmosphere - Check Oxygen Level Before and During Entry'.

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Breathing apparatus

Breathing apparatus (BA) must be used if entry can't be avoided and non-flammable air quality hazards can't be controlled to within the safe limits listed in *HSG0512*.

Apparatus must comply with *AS/NZS 1715 Selection, use and maintenance of respiratory protective equipment*.

No person is allowed inside if flammable gases or ionising radiation exceed their safe levels, even if wearing BA.

2.5.5 Atmospheric testing and monitoring

Methods and limits

A standby person who is competent in air quality testing and monitoring must test and monitor the air quality before entry and while the space is occupied, in all instances where a specialist gas tester is **not** required.

This must be done according to the methods described in *HSG0512 Confined Space Ventilation and Air Quality Monitoring*. Entry is not permitted until air quality is confirmed to be within the limits in *HSG0512*.

Traverse parties / work teams must use a personal gas detector in the confined space.

The space must be evacuated if the air quality hazard limits in *HSG0512* are exceeded.

The *Air Quality Results* form on iConnect can be used to record results.

Specialist gas testers

A specialist gas tester must be engaged to test the air quality before entry and to monitor it while the space is occupied (except where delegation is permitted as described below), in the following instances:

- Any sewer traverse.
- Entry to the NSOOS, BOOS, SWSOOS, NGRS.
- Entry to a sewer or SPS:
 - downstream of a trade waste discharge of volatile substances or nuclear medicine
 - that has an air quality discharge hazard shown in the Hydra GIS
 - that is identified as receiving 'significant trade waste air quality' in the *SPS Trade Waste Classification Register* or in the site hazard information.
- Entry to the sewer between the waste disposal plant in Hill Rd, Lidcombe and SPS67.
- Where hot work is to be done **in or on** a confined space that is a zone 1 flammable gas hazard area. Refer to *HSP-062 Control of Hot Work* and *TG-502 Classification and Management of Flammable Gas Hazardous Areas* to do this.
- Entry into any chemical or fuel storage tank.
- If the confined space team suspect any potential hazardous substance or dangerous goods, for instance: odours or unusual colour, behaviour or flow of water or sewage.
- If the asset or its surrounding land has a history of illegal discharge or contamination, such as: fuels, chemicals, radiation or dioxins.

Specialist gas tester delegation to other competent gas testers

The specialist gas tester may delegate ongoing monitoring duties to a person on the confined space entry team who is competent in monitoring, **only** after confirming that

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there are no significant trade waste (air quality) hazards present, or where it is confirmed that these hazards have been isolated from the confined space.

The specialist must also confirm that all other air quality parameters are within limits and advise the responsible person for entry on any further requirements.

Delegation must be recorded on a '*Delegation of Continuous Gas Monitoring*' form.

IICATS monitoring and mobile LEL monitoring stations.

IICATS should be used to get information about hydrogen sulphide gas, and mobile LEL stations used to get information about flammable gases, when planning sewer work.

These can also be used to send hazard alarms to the responsible person for entry.

2.5.6 Standby persons

Standby person duties

There must be enough standby persons outside and close to each open access point to assist people inside and to monitor communication.

They must not secure or leave the access point until the responsible person for entry has confirmed that all people have exited or arrived at another safe exit.

At least one team member must be able to see that portable mechanical ventilation equipment is working when it's in use.

Ensure unauthorised people or animals don't enter the confined space.

Entry into a confined space must not be made under lone work conditions, refer to *HS-057 Lone / Isolated Worker*.

Communication with people inside the confined space

There must be a constant means of communication between the standby persons and people in the confined space.

The method must consider transmission black spots and restrictions caused by: asset design or use, noise, light, darkness, dust, or people or equipment blocking the signal.

A back up method must be tested and ready in case the primary system fails.

Entry is not permitted until they are tested and understood by the confined space team.

For confined spaces with restricted radio transmission, such as curved pipes; a hardwire system or a wireless: microwave, long wave or low frequency system may be required. This may need to be operated by a communication specialist.

The system must be monitored at enough points along the confined space to maintain a constant transmission between the people inside and standby persons.

Appendix 5 suggests some communication options based on sound and sight quality.

2.5.7 Entry protection

Danger signs at entrance

The responsible person for entry must ensure that the sign 'Danger - Confined Space - Entry by Permit Only' is erected in an obvious position close to each entrance to the confined space, while people are working in and preparing to work in the confined space.

Barriers to prevent unauthorised entry

Barriers to prevent unauthorised or accidental entry must be placed over or around open vertical access points, such as maintenance holes and hatches, and around open horizontal access points, while work is underway.

They must be designed and positioned so they don't restrict ventilation.

Pay attention to the type of barrier used where falls to children or animals are a risk.

The entrance to the space or leading to the space must be closed and secured when work is finished to prevent unauthorised or accidental entry.

Where practicable, the sides of open concrete stormwater drains must be fenced to restrict access to the enclosed parts.

Fall arrest system

A fall arrest system must be used, if protective barriers are not reasonably practicable and there is a risk of falling into an opening with a depth of 2 m or more. The type and its limit of use must be suitable to the task, for instance: working near an open hatch may require a type 2 device with a limited free fall, such as an inertia reel.

The loading of an anchorage must not be exceeded. An engineer must be able to confirm that fixed anchorages and the structure it is fixed to, meet the required strength in the direction of loading for the number of people it is intended for, to a maximum of two.

The manufacturer must be able to confirm this for tripods and davits.

An anchorage sling may be used to form an anchorage around a solid permanent structure, as long as it is clear to a competent person that it will meet the required strength for the number of people it is intended for, and complies with AS 1891.4

A standby person can anchor to the same tripod as the person on the rope access system, if it meets the required strength for two people.

Fall arrest system components must comply with *AS 1891.4 Industrial fall-arrest systems and devices. Part 4: Selection, use and maintenance*.

2.5.8 Confined space access

Openings used for access

Openings used for access must remain open with standby persons present until the responsible person for entry confirms that all people have either exited from the same point or have arrived at another safe exit.

Openings must be closed and secured when work is finished.

Ensure there are no obstructions around openings when people are entering or exiting.

Dimensions for openings

The minimum widths required for openings are:

- Without breathing apparatus: 450 x 400 mm for rectangle and oval entries and 450 mm diameter for round entries.
 - With breathing apparatus: 750 x 700 mm.
-

Dimensions for access and work in hydraulic assets

Entry to hydraulic assets is only permitted if they have the following dimensions:

- Access chambers: 750 x 700 mm internal diameter.

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- Water assets (excluding reservoirs): at least 750 mm diameter with no water in it.
- Sewer assets and water reservoirs: at least 900 mm diameter and at least 750 mm of air space between the water level and its roof.
- Stormwater assets: at least 900 mm in height with the water level at dry weather conditions.

Access via fixed stairways, step ladders, rung ladders and step irons

For vertical access, consult with responsible managers of assets to arrange installation of one of the following if not already installed, in order of preference:

1. Stairways with hand rails. If this is not possible, such as: due to a lack of space or the presence of other hazards, then:
2. Step ladders with handrails. If this is not possible, then:
3. Rung ladders. If this is not possible, then:
4. Step iron ladders.

Responsible managers of assets must document why higher preferences are not reasonably practicable, if a lower preference of access is chosen.

Load force, lengths, staggering of landings, direction changes, angles and other dimensions must comply with *AS 1657 Fixed platforms, walkways, stairways and ladders – Design, construction and installation*.

The responsible person for entry must obtain an engineers report before entry if the structural integrity of access is doubtful, or use another safe access.

Rope access

A tripod or davit with a working rope, harness and lanyard, and a secondary safety line, must be used to assist vertical access into openings, such as maintenance holes and hatches, where:

- there is no other form of fixed access (eg rung ladder)
- and it is too deep to climb in and out unassisted.

A fall arrest device can be used as the secondary safety line.

A winch should be used to minimise manual handling risks.

Tripods and mobile davits must be used in a way that prevents them falling over.

The system must comply with *AS/NZS 4488 Industrial rope access systems. Part 2: Selection, use and maintenance*.

Lighting for access and work

The confined space must be sufficiently lit to allow safe access and work.

Lighting must be intrinsically safe unless air quality testing can confirm flammable gases are below 5% of their LEL, before lights are switched on.

Access from roads

Access should be made off roads where possible, to reduce traffic hazards.

If this is not possible, an approved traffic management plan must be implemented if entry or ventilation is on or near a road where it could disrupt traffic or cause a risk to any person. Follow *HS-051 Safe Working on Roads* to do this.

2.5.9 Personal protective equipment

The task and conditions inside the confined space will determine what PPE is required, such as: hard hats, hearing protection, eye protection, masks or respirators, gloves, waders and wet suits. Refer to *HS-069 Occupational Personal Protection* for guidance.

Clothing to protect against heat stress or hypothermia must be worn if these are a risk. Refer to WorkCover Code of Practice - *Work in Hot or Cold Environments*.

2.5.10 Emergencies Refer to HSP-004 Emergency Preparedness

Emergency Response Plan (ERP)

Responsible managers of CSW must ensure a task specific emergency response plan is established and rehearsed for potential emergencies.

An emergency arises when the risk from the HIDRA is realised, such as: flooding, or air quality limits are exceeded.

The template on iConnect can be used to document the plan. The plan should not conflict with any existing ERP's for manned and unmanned sites.

Factors to consider include:

- The roles of: people inside, the responsible person for entry and standby persons in an evacuation or rescue.
- The evacuation route and the location of and distance to the exit points, for complex confined spaces such as sewers.
- The likely conditions inside, the size, weight and number of affected people and how to rescue unconscious or injured people from awkward areas that aren't near exits.
- How obstructions may impact an evacuation or rescue. For instance: a rope access system needs a direct path free from entanglement.
- The back up communication method if the primary system fails.
- Response time and accessibility for emergency services.
- Engaging a specialist rescue service if the confined space team does not have sufficient capability for a rescue.
- Consulting the fire brigade if they are relied on as the primary rescue service.

Section 2.5.8 details requirements for openings and for access in hydraulic assets.

Attachment 3 is an example of an ERP including potential confined space incidents.

Rescue equipment

The ERP will determine what rescue equipment is required. For instance: a rope access system, breathing apparatus and/or oxygen self-rescuers.

Confined space training covers the use of rescue equipment.

First aid and cardio pulmonary resuscitation (CPR)

Consider who will administer first aid and CPR.

People affected by extremes of temperature must be rested and re hydrated away from the source of the risk, and cooled or warmed, until symptoms go away. Refer to *Work in Hot or Cold Environments*

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The ERP will determine what first aid equipment is required. St Johns Ambulance recommends an 'emergency evacuation kit'.

Refer to section 2.7.6 for first aid and CPR training requirements.

Fire fighting

ABE rated powder extinguishers are best for confined space work. Carbon dioxide (CO²) extinguishers and fire suppression systems can only be used when the responsible person for entry has confirmed that all people have exited the confined space.

Confined space training covers the use of fire fighting equipment.

2.5.11 Entry permits

The responsible person for entry must fill out and sign an entry permit before entry is allowed. The *Confined Space Entry Permit* template on iConnect can be used for this.

They must not permit entry until all controls are confirmed, and all people entering the confined space have been inducted, declared fit and have a current confined space card.

The permit must be revalidated whenever there is:

- A change of team member or responsible person, such as: a change of shift.
- A break in the occupancy of the confined space, such as: a lunch break.

A new or separate permit must be filled out whenever:

- The confined space team exits and then re enters at another location.
- More than one team enters the confined space from separate locations.
- New hazards arise. In which case the HIDRA must be updated.
- There has been an evacuation and the team plans to re enter the confined space.

The responsible person for entry must complete and sign the entry permit before the confined space is returned to service.

Attachment 2 is an example of an entry permit filled out.

2.6. Documents *Refer to HSP-061 HSMS Document Management*

Responsible managers of CSW must ensure the following are documented:

- Risk control procedures, such as: traverse plans or safe work method statements.
- Work orders for work to be done in or on a confined space.
- Emergency response plans.

2.7. Training

For Sydney Water staff, training needs can be included in divisional training plans and arranged via Compass.

2.7.1 Confined space initial training

The roles below require a card in either Nation Water Package (NWP) *NWP219A Work Safely in Confined Spaces* or Resources & Infrastructure (RII) Industry Package *RIIOHS202A Enter and Work in Confined Spaces*, before doing confined space work.

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- Any specialist required to work in a confined space, such as: maintenance crew, rehabilitation crew, engineers, geologists, electricians, divers, heritage officers, hydrographers, water samplers, and cleaners.
- People working in or on a confined space to do HIDRA.
- Specialist gas testers
- Responsible persons for entry.
- Stand-by persons.
- Any person required to enter as part of a rescue.

Participants must be trained in CPR and meet the requirements of Sydney Water's *Confined Space Certification Policy*.

2.7.2 Confined space refresher training

Any person with a confined space card must do a NWP or RII refresher course every three years to maintain competency.

2.7.3 Confined Spaces Management Overview

This is an online course that covers manager and supervisor responsibilities under the *Work Health and Safety Regulation 2011* and this procedure. The following people must do it:

- Responsible managers of assets.
- Responsible managers of CSW.
- Responsible managers of construction.
- Responsible managers of mobile plant.
- Asset designers (of confined spaces).

2.7.4 Flow Isolation and / or Flow Management (FIFM)

Training in *HSP0070 Flow Isolation and / or Flow Management (FIFM)* may be required for people planning or implementing controls for engulfment.

2.7.5 Apply First Aid and Cardio Pulmonary Resuscitation (CPR)

Apply First Aid is the WorkCover recognised competency for the workplace. The following people must be trained:

- A standby person plus at least two people in the traverse party, for traversing.
- A standby person plus at least one person in the confined space for non-traverse work if the controls include hydraulic isolation or flow management, and / or in any of the instances where a specialist gas tester is required under section 2.5.5.
- At least the standby person for all other work.
- All people required to take part in a rescue.

All other people in the confined space team must have CPR. It must be done prior to doing the NWP or RII initial courses and as part of the refresher training.

2.7.6 Specialist Gas Testing

Specialist gas testers must do this course before being assigned to the work.

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2.8. Communication Refer to *HSP-011 Consultation & Communication*

Communicate asset design plans, HIDRA's, risk control procedures, entry permits, ITM schedules and ERP's with anyone that these affect. This includes changes of shifts or crews, including contractors and subcontractors.

All people involved with the work must communicate new hazards.

Responsible managers of CSW must communicate the results of incident investigation and the details of corrective action.

2.9. Do confined space work

2.9.1 Induction

As a minimum, any person entering a confined space must be inducted into the following requirements relevant to the work, before entry:

- HIDRA.
- Risk control procedure.
- Emergency response plan.
- Selection, use, fitting and maintenance of safety equipment to be used.

2.9.2 Implement controls

The responsible person for entry, confined space entry team, standby person and gas tester do the work and implement or follow (as relevant) the risk control measures from section 2.5.

2.10. Incident reporting Refer to *HSP-003 Incident Notification & Reporting*

Anyone involved must report incidents, near misses, new hazards and non-conformances to the responsible manager of CSW as soon as possible. Examples include:

- evacuation
- gas detector alarm while people are in the confined space
- isolation failure
- person in confined space becomes affected by gases, low oxygen or thermal stress.

The responsible manager of CSW must ensure these are entered into Sydney Water's Incident Recording System (IRS) within two days of being notified.

2.11. Inspection, testing and monitoring Refer to: *HSP-010 Inspection, Testing & Monitoring*

Responsible managers of assets and responsible managers of CSW must ensure there is inspection, testing and monitoring (ITM) of confined space work areas under their control.

Responsible managers of CSW must ensure there is inspection, testing and monitoring of confined space work methods, plant and equipment, and people's health.

Non-conformances must be addressed by corrective action.

Attachment 4 is an example of an ITM schedule with confined space items in it.

2.11.1 Work areas

Inspect confined space work areas for things such as:

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- the function of pumps, valves and switchboards required for isolation
- the condition of: maintenance holes, ladders, stairways, platforms and guardrails, etc.

2.11.2 Work methods

Inspect items, such as: risk control procedures, entry permits and ERP's.

2.11.3 Plant and equipment.

Inspect items, such as: gas detectors, ventilator fans, breathing apparatus, air cylinders, shackles, ropes, tripods and communication devices.

Frequency and acceptance criteria are to be based on manufacturers recommendation and / or Australian Standard.

2.11.4 Peoples health

Fitness test

Sydney Water staff working in confined spaces must meet the requirements of Sydney Water's *Confined Space Certification Policy*.

Extremes of temperature

All team members must be alert to the physical warning signs of heat stress and hypothermia for themselves and other team members. These are listed in *HSG0512*.

2.12. Corrective and Preventative Action Refer to: QMAF0011 Non Conformance, Preventative & Corrective Action

Responsible managers of CSW must ensure that corrective action is used to address incidents, near misses and non-conformances, such as:

- the communication system fails
- isolation fails
- people enter the confined space without an entry permit.

Preventative action is to be used to address potential non-conformances, such as:

- a gas monitor is close to it's calibration date.
- a persons confined space card is due to expire.

2.13. Records Refer to HSP-061 HSMS Document Management

Responsible managers of assets must keep a record of the location and description of confined spaces at manned and unmanned sites under their area of control.

Asset designers must document and keep records of asset plans and specifications.

Training records for Sydney Water staff are maintained in Compass.

Responsible managers of CSW must ensure the following records are maintained. Refer to *Record Keeping: 1. Creating and Storing Records* for storage methods.

Record	When	How long
HIDRA.	Before work begins.	5 years.
Completed entry permits.	Before entering the confined space.	5 years.
Air quality results.	Before entering the confined space.	30 years.

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Results of ITM schedules (including records of servicing and maintenance, and fitness assessment).	As per the scheduled date.	30 years for people's health items. 5 years for work areas, work methods, and plant and equipment items.
Incidents.	As per <i>HSP-003</i> .	As per <i>HSP-003</i> .

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3. Context

3.1. Definitions

Term	Definition
Air quality hazard Refer to <i>HSG0512</i>	<ul style="list-style-type: none">• Non-flammable: fumes, mist, dust, gas, dust or vapour, volatile substances, smoke and other asphyxiants (eg: hydrogen sulphide) above their exposure standards.• Oxygen less than 19.5% or greater than 23.5%(i.e.: oxygen rich air) of air content.• Flammable gases (eg: methane) more than 5% of its LEL.• Sewage aerosols.• Ionising radiation greater than 0.5 uSv / hour.• Extremes of temperature and humidity.
Area manager	The person responsible for the operation of the asset where isolation or flow management is needed, as follows: <ul style="list-style-type: none">• Water – Water Networks Area Manager.• Wastewater – Wastewater Networks Area Manager.• Stormwater – Stormwater Manager.• Treatment Operations – Area Treatment Operations Manager.
BOOS	Bondi Ocean Outfall Sewer.
Confined space. From: <i>WHS Confined Space Code of Practice 2011</i>	An enclosed or partially enclosed space that: <ul style="list-style-type: none">• is not designed or intended primarily to be occupied by a person, for example, it has poor ventilation, poor lighting, and the size or location of the opening makes it physically difficult to get in and out of or to remove an injured or unconscious person from the space, and• is, or is designed or intended 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 any one or more of the following:<ul style="list-style-type: none">– An atmosphere that does not have a safe level of oxygen, ie not between 19.5 and 23.5%.– Contaminants, including airborne gases, vapours or dusts, that may cause injury from fire or explosion, eg methane.– Harmful concentrations of any airborne contaminants, ie those above the relevant exposure standard, or are likely to cause impairment, loss of consciousness or asphyxiation, eg hydrogen sulphide.– Engulfment by any liquid or solid, such as: water, sewage, stormwater or sludge.
Confined space entry. From: <i>WHS Confined Space Code of Practice 2011</i>	When a person's head or upper body is within the boundary of the confined space. Inserting an arm is not entry.
Fall arrest device From <i>AS/NZS 1891</i>	A self-locking device whose function is to arrest a fall.
FIFM	Flow isolation and / or flow management.
FGH	Flammable gas hazard.
Flow and depth hazard	Un-isolated water, sewage or stormwater above dry weather conditions

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	or low system demand time. High tide and flooding or ebbing tide.
FMIHA	Flow management and isolation of hydraulic assets.
Hydra GIS	Sydney Water's asset geographical information system.
IICATS	Integrated, Instrumentation, Control, Automation and Telemetry System.
LEL	Lower explosive limit.
LOTO	Lock out tag out: the process of physically locking a piece of plant or equipment that has stored power or energy, so that it cannot be operated.
NGRS	Northern Georges River Sub Main.
NSOOS	Northern Suburbs Ocean Outfall Sewer.
Responsible manager of confined space work (CSW)	The manager responsible for the people doing the confined space work.
Responsible person for entry	The person onsite who has been authorised by the responsible manager for CSW to permit people to enter the confined space.
Risk control procedure	Safe work method statement, standard operating procedure, work instruction, traverse plan or similar.
Rope access system, from AS/NZS 4488	'A system for providing access to a workplace by suspension from a rope where a person is attached to both a working line and a secondary safety system'.
SCBA	Self contained breathing apparatus.
SPS	Sewage pumping station.
SWSOOS	South Western Suburbs Ocean Outfall Sewer.
Trade waste hazard	Any hazardous aqueous liquid or substances contained in it that may be produced at the premises of an industrial or commercial activity and discharged into a sewer. This may also include run off from contaminated surface water and groundwater.
Traverse	Lateral movement of more than 10 m inside a water, sewer or stormwater conduit. Does not include short closed sections of a stormwater system that is otherwise open, such as under a single lane road.
Volatile substances	Substances, which change readily from a solid or liquid to vapour, such as petrol.

3.2. Responsibilities

Position	Responsibility
All persons involved in confined space work or tours	<ul style="list-style-type: none"> • Hazard identification, contribute to risk assessment, apply and monitor effectiveness of controls, communicate new hazards and infective controls to impacted people on the job. • Cooperate with: risk control procedures, ERP's, ITM schedules, training plans, inductions and preventative or corrective action. • Note and understand restrictions or conditions of use for plant, equipment and accessories. • Report incidents, new hazards and non-conformances. • Mentor less experienced people.
Asset designers	<ul style="list-style-type: none"> • Determine if the need for entry can be eliminated through design. • Comply with responsibilities in <i>HSP-058 Risk Assessment in Design</i>.

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	<ul style="list-style-type: none"> • Identify confined spaces during the design stage. • Ensure people affected by confined space identification or eliminating the need for entry through design, are consulted
Communications specialist	<ul style="list-style-type: none"> • Provide and monitor continuous communication system if required.
Confined space entry team member	<ul style="list-style-type: none"> • Ensure they have a current confined space card and WorkCover induction card (excluding the instances below where untrained persons are permitted entry) and are fit. • Checking all PPE and CSE is valid and in good condition before use. • Understanding the task that they are to do in the confined space. • Sign the entry permit when entering and exiting.
Responsible person for isolation	<ul style="list-style-type: none"> • Comply with isolation responsibilities in <i>HSP-049</i> and <i>HSP-070</i>. • Ensure they have completed training in <i>LOTO</i> and <i>FMIHA</i>.
Responsible managers of assets (all)	<ul style="list-style-type: none"> • Comply with approval responsibilities in <i>HSP-070</i> and <i>HSP-049</i>. • Provide operational requirements and specifications of confined spaces. • Ensure people affected by confined space identification are consulted. • Ensure they have completed management overview training (excluding property managers of customer assets).
Water and wastewater network managers	<ul style="list-style-type: none"> • Ensure water or wastewater networks confined spaces are identified and labelled.
Treatment plant managers	<ul style="list-style-type: none"> • Ensure treatment plant confined spaces are identified and labelled.
Property managers	<ul style="list-style-type: none"> • Ensure building confined spaces are identified and labelled.
Stormwater asset manager	<ul style="list-style-type: none"> • Ensure enclosed stormwater outflows are identified and labelled.
Construction manager	<ul style="list-style-type: none"> • Ensure confined spaces under construction or modification are identified and labelled.
Mobile plant manager	<ul style="list-style-type: none"> • Ensure boat and barge confined spaces are identified and labelled.
Responsible person for recommissioning	<ul style="list-style-type: none"> • Not commence recommissioning of isolated hydraulic assets until the responsible person cancels the entry permit.
Responsible manager of confined space work (CSW)	<ul style="list-style-type: none"> • Ensure confined space HIDRA is done, recorded and reviewed and that relevant risk control measures are implemented. • Determine if the need for entry can be eliminated through new work methods or technologies. • Ensure: ITM activities, ERP's, training plans, and corrective and preventative action are created and implemented. • Ensure documents are created and records maintained. • Ensure people affected by: confined space hazard identification and risk assessment, eliminating entry through new work methods or technologies, risk control procedures and emergency response plans, are consulted. • Communicate risk control procedures, ERP's, new hazards and the results of incident investigation and corrective or preventative action.

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	<ul style="list-style-type: none"> • Ensure the supply of training and confined space plant, equipment including safety equipment and communication devices. • Ensure incidents are recorded in the IRS. • Ensure they have completed management overview training. • Arrange the yearly fitness assessment for staff that are required to enter confined spaces. • Ensure the responsible person for entry is authorised to do the role, has a current confined space card, and experience and competency in the type of confined space work that they will be responsible for.
Responsible person for entry	<ul style="list-style-type: none"> • Complete and sign the entry permit. This involves: <ul style="list-style-type: none"> - allowing or denying entry based on whether they are satisfied that the controls have been implemented - verifying entry and exit sign offs for the confined space entry team - cancelling the permit once the job is finished. <p>As such they are the contact point for controls that require sign off or confirmation, such as: isolation, air quality, hot work permits, etc.</p> <ul style="list-style-type: none"> • Authority to deny entry to any person if they are not satisfied that the risk to that person can be adequately controlled. • Ensure they understand their authority, before doing the role. • Ensure they have a current confined space card. • Ensure that untrained people declare their fitness before entry. • Provide the induction described in section 2.9.1. • Engage specialist gas testers if required.
Standby person Note: they can also be the responsible person for entry if:	<ul style="list-style-type: none"> • Ensure they have a current confined space card and are fit. • Stay outside and close to the entry point and operate communication systems and devices. • Restrict unauthorised people or animals from entry. • Assist with access and emergency response if required. • Air quality testing and monitoring when a specialist gas tester is not required, confirming that the air quality is within range before entry, and entering the results on the air quality results form. <ul style="list-style-type: none"> • The controls don't include hydraulic isolation or flow management. • Specialist gas testers are not required.
Specialist gas tester	<ul style="list-style-type: none"> • Specialist air quality testing and monitoring, when required. • Advising on ventilation, when required.
Specialist rescue service	<ul style="list-style-type: none"> • Provide standby rescue capability in the event of an emergency, if the confined space team does not have the capability.
System operations officer	<ul style="list-style-type: none"> • Provide operational information on water or wastewater assets as well as potential water or wastewater operational hazards.
Team leader	<ul style="list-style-type: none"> • Comply with sign off and approval responsibilities in <i>HSP-070</i>.
Trade waste officer	<ul style="list-style-type: none"> • Provide information on trade waste agreements.
Untrained person (person without a confined space card)	<ul style="list-style-type: none"> • They can only enter for tank stream tours or where the risk is likely to be low. Examples include: audits, inspections, quotes or tours of: machinery wells, cleaned and dewatered reservoirs, grease trap rooms and tanks with natural or permanent ventilation. Access must be either horizontal or good vertical access, such as stairways or step ladders complying with <i>AS 1657</i>.

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- They must not enter:
 - if the responsible person for entry is not satisfied of their safety
 - in any of the instances where a specialist gas tester is required
 - until they receive the induction described in section 2.9.1.
 - unless they are with a trained person.

3.3. References

Note: the following references were applicable at the time of issue. Users should check their currency when referring to them.

Document type	Title
Legislation	<i>Work Health and Safety Regulation 2011.</i>
Australian Standards	<i>AS 2865 Confined Spaces.</i> <i>AS/NZS Handbook HSB 213 Guidelines for safe working in a confined space.</i> <i>AS 1657 Fixed platforms, walkways, stairways and ladders – design, construction and installation.</i> <i>AS 1891.4 Industrial fall-arrest systems and devices. Part 4: Selection, use and maintenance.</i> <i>AS/NZS 4488 Industrial rope access systems. Part 2: Selection, use and maintenance.</i> <i>AS 1319 Safety signs for the occupational environment.</i> <i>AS/NZS 1715 Selection, use and maintenance of respiratory protective equipment.</i> <i>WHS Code of Practice Confined Spaces</i>
Policies and procedures	<i>Sydney Water Confined Space Certification Policy.</i> <i>HSP-026 Control of Hot Work.</i> <i>HSP-011 Consultation and Communication.</i> <i>HSP-076 Diving Safety.</i> <i>HSP-004 Emergency Preparedness.</i> <i>HS-052 Fall Prevention.</i> <i>HSP0070 Flow Isolation and / or Flow Management</i> <i>HSP-014 HIDRA.</i> <i>HSP0003 Incident Notification and Recording.</i> <i>HSP-010 Inspection, Testing & Monitoring.</i> <i>HSP-049 Lock Out / Tag Out.</i> <i>QMAF0011 Non Conformance, Preventative & Corrective Action.</i> <i>HS-069 Occupational Personal Protection.</i> <i>HSP-058 Risk Assessment in Design.</i> <i>HS-051 Safe Working on Roads.</i> <i>HSP-074 Water Safety.</i>
Guides	<i>HSG0512 Confined Space Ventilation and Air Quality Monitoring.</i> <i>HSG-552 Control of Exposure to Ionising Radiation in Sewers.</i> <i>TG-502 Classification and Management of Flammable Gas Hazard Areas.</i> <i>HSG-542 Planning and Carrying Out Inspections and Work in Traversable Conduits.</i> <i>HSG-553 Safe Systems of Work for Sewage Facilities Near Chemical Dosing</i>

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	Units. HSG-541 Sample Traverse Plan Shell.
Other documents	MSDS-701 Raw Sewage. Work in Hot or Cold Environments –WorkCover Code of Practice.

3.4. Attachments

Attachment	Name
One	Example of a HIDRA including confined space hazards, risks and controls.
Two	Example of a confined space entry permit.
Three	Example of an ERP for confined space emergencies.
Four	Example of an ITM schedule including confined space related items.
Five	Confined space communication options.

4. Document control

Procedure title:	HSP0001 Confined Space Safety version 6				
Current review date:	2 August 2012	Original policy effective date:	1990	Next review date:	As required.
Computer file name:	HSP0001 Confined Space Safety, version 6	Document no:	HSP0001 version 6		
History:	<ul style="list-style-type: none"> Version 2 (22 July 2010): Replaces <i>HSP-001 Safe Entry & Work in Confined Spaces BMIS v1</i>, issued on 5 August 2008. Version 3 (21 January 2011): Incorporates minor changes to rope access systems, fall arrest devices, hydrographic monitoring, ITM and communication. Controls re ordered to fit under the headings for confined space particular control measures from the <i>NSW OHS Regulation 2001</i>. Version 4 (9 December 2011): Changes to the requirements for specialist gas tester delegation under section 2.5.5. Version 5 (27 April 2012): Changes to the definition of a confined space to be consistent with <i>Confined Space Code of Practice</i>. Version 6 (2 August 2012): Minor change to requirements for personal gas detectors for traversing in section 2.5.5. Version 7 (7 September 2012): Changes to requirements for a danger sign in section 2.5.7. Also removal of the references for the fitness test and the details for the observation checklist from section 2.11, as these are now covered by Sydney Water's <i>Confined Space Certification Policy</i>. 				

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Attachment 1 Example of a HIDRA including confined space hazards, risks and controls

Activity/Task/Hazard being assessed			Context of assessment			Person(s) conducting assessment		
Sewer inspection.			Sewer traverse involving confined space work.			Stan Jurd and Darren Britt.		
						Date of assessment		
						10 February 2010.		

	Very Likely	Likely	Unlikely	Very Unlikely
CAT. SEVERE	1	1	2	3
MODERATE	2	3	4	5
MINOR	3	4	5	6
INSIGNIF.	4	5	6	6

Hazard	Impact		Risk Before Controls			Controls (List all controls – current and required – intended to support the development of safe systems of work)	Risk After Controls		
	What can harm you?	What can happen?	How it can happen?	Consequence	Likelihood		Risk Rank	Consequence	Likelihood
Hydraulic engulfment	Increase in flow or water level causing drowning.	Pump activates causing increase in flow. Stormwater or tide infiltrates system.	Catastrophic	Likely	1	<ul style="list-style-type: none"> Isolate sewage pumping station 4 upstream as per <i>HSP-070 Flow Management & Isolation of Hydraulic Assets</i>. Work is to be carried out in dry weather conditions and at low tide. Check Bureau of Meteorology for tide times and rainfall in associated stormwater catchment. 	Moderate	Very Unlikely	5
Hydrogen sulphide gas.	People overcome by gas.	Worker enters area where turbulent sewage flow releases gas.	Catastrophic	Likely	1	<ul style="list-style-type: none"> Isolate SPS to minimise turbulence. Purge gas with mechanical ventilation. Evaluate if gas goes above 10 ppm. 	Moderate	Unlikely	4
Oxygen < 19.5%.	People overcome by gas.	Worker enters area where rotting organic matter has reduced oxygen.	Catastrophic	Unlikely	2	<ul style="list-style-type: none"> Re oxygenate with mechanical ventilation before entry. Use breathing apparatus. 	Moderate	Unlikely	4
Oxygen > 23.5%.	Explosion.	Spark in area with oxygen enriched atmosphere.	Catastrophic	Unlikely	2	<ul style="list-style-type: none"> Isolate chemical dosing unit. Evacuate if oxygen reaches 23.5%. Use only intrinsically safe tools, torches and communication devices. 	Moderate	Unlikely	4
Methane gas.	Explosion.	Spark in area where decomposing organic matter releases gas.	Catastrophic	Likely	1	<ul style="list-style-type: none"> Purge gases with mechanical ventilation. Evacuate if gases go above 5% of their LEL, as per <i>HSG0512 Confined Space Ventilation and Air Quality Monitoring</i>. Use intrinsically safe, torches, tools and radios. 	Moderate	Unlikely	4
Trade waste discharge.	Poisoning, burns, skin irritation, respiratory arrest.	Working downstream of industrial customer discharge	Severe	Unlikely	3	<ul style="list-style-type: none"> Check the HYDRA GIS to see if there is a trade waste hazard in this section of sewer. Work outside of discharge times or organise via the relevant trade waste officer for customer to isolate discharge until entry permit is closed. 	Moderate	Unlikely	4
Hitting yourself on structure or fall over.	Physical injury.	Poor lighting. Not see what your doing	Severe	Very Likely	1	<ul style="list-style-type: none"> Use headlamps and torches at all times for access and for undertaking tasks. 	Moderate	Unlikely	4
Fumes, smoke, vapours, dirt, dust.	Asphyxiation, severe coughing, drowsiness, loss of consciousness.	Generated by welding, cutting, grinding, drilling, kango hammering.	Catastrophic	Likely	1	<ul style="list-style-type: none"> Extract fumes, smoke and vapor with intrinsically safe fan. Wear a P2 mask and safety goggles for dirt and dust. 	Minor	Unlikely	5

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Attachment 2 Example of a confined space entry permit

Confined Space Entry Permit



To be completed by the responsible person for entry

Refer to: HSP0001 Confined Space Safety

Description and location of confined space: Sewer main between Nugget St and Boggo Rd intersection, and 24 Boggo Rd.

Description of work to be done: Sewer inspection.

Risk control measures:

Control	Details (NA if not applicable)	Confirmed (Responsible Person to initial)
Hydraulic isolation / flow management plan confirmed?	SPS 2 LOTO confirmed at 8:00am Detention time = 4 hours	CF
Hydrographic monitoring required?	Rainfall in catchment monitored via BOM. No rain in previous 24 hours or forecast for duration of work	CF
Plant & equipment isolation confirmed?	CDU at SPS 3 LOTO confirmed at 7:45am.	CF
Trade waste isolation or control confirmed?	No discharge hazards known.	CF
Chemical dosing required?	N/A	N/A
Cleaning required?	N/A	N/A
Mechanical ventilation or extraction operating?	Portable ventilation fan over manhole in Nugget St, upstream of entry.	CF
Hot work permit required?	N/A	N/A
Hazardous plant and processes banned?	No ignition sources or exhaust emitting plant near openings. Generator upwind and well away.	CF
Hazardous atmosphere warning signs in place?	Not required. Ventilation to control atmosphere.	CF
Breathing apparatus required?	Not required. Ventilation to control atmosphere	CF
Air quality confirmed to be within limit?	Confirmed. See attached air quality results form.	CF
Standby person(s) and communication system in place?	One at each opening. Wireless microwave headsets. Receiver at each opening and for each person inside.	CF
Danger signs in place?	Portable sign at each opening.	CF
Barriers to prevent unauthorised entry in place?	Grate placed over each opening when people not entering/exiting. Portable barricade around opening.	CF
Fall arrest system OK?	Standby person anchored to tripod.	CF
Openings and asset dimensions OK?	500 mm diameter openings. 1066 diameter pipe.	CF
Access via fixed stairway, step ladder, rung ladder or step irons OK?	Step irons	CF
Rope access system OK?	Tripod, rope, lanyard and harness at each opening.	CF
Lighting OK?	Headlamps to be worn.	CF
Traffic management plan required?	Yes approved by Ces Chamber.	CF
PPE to be worn.	Waders, hardhats, gloves and goggles	CF
Emergency response plan in place?	Yes, covered by induction.	CF
Rescue equipment / first aid kit / fire fighting equipment.	Rope access system at each opening. Oxygen self rescuers to be worn. First aid kit and fire extinguishers in trucks.	CF
Other	All people inducted.	CF

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Confined space entry team

I have been inducted and understand the risk control measures for working in the confined space.

Name (person entering)	Entry time	Sign	Exit time	Sign	Standby persons	Sign
Fae Col	9.30am	FC			Sue Erchoke	SE
Col I Form	9.32am	CF			Com Kaldosingunit	CF
Di Gester	9.35am	DG			Sid Inenttank	SF
Sue Erfix	9.38am	SE				
Des Alination	9.42am	DA				

Responsible person sign off

PERMIT TO ENTER: Controls are implemented and the confined space entry team has been inducted.		PERMIT CANCELLED: Work is finished, all persons have left the confined space and access has been secured.	
Name: Con Finedspace	Sign: <i>[Signature]</i>	Name:	Sign:
Time: 9.20 am	Date: 15/2/2010	Time:	Date:

Responsible person re validation sign off (cross out if not needed)

PERMIT TO ENTER: Controls are re confirmed as implemented.		PERMIT CANCELLED: Work is finished, all persons have left the confined space and access has been secured.	
Name:	Sign:	Name:	Sign:
Time:	Date:	Time:	Date:

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Attachment 3 Example of an ERP for confined space emergencies.

Task Specific Emergency Response Plan for: Sewer Inspection

This is a template for doing a task specific Emergency Response Plan at any site. It is not intended for fixed office or depot evacuations. Make the task generic, e.g.: 'Inspection and Maintenance of Pumping Stations'.

Emergency Contact Information

Emergency Service	Fire Brigade / Ambulance	000
Sydney Water	Contact Centre	132 090
Responsible Manager	Ces Chamber	0408 333 444
Safety Support Coordinator	Sue Erfix	0418 222 333 / 9858 5858
Other	Con Finedspace (Responsible Person)	0416 333 222 / 9666 2222
	Sue Erchoke (Standby Person)	0419996633 / 9555 3636
	Troy Pod (Standby Person)	0419223366 / 9666 4441

Emergency response

Risk* (from the HIDRA)	Response
Flooding.	<ul style="list-style-type: none"> • If there is a sudden increase in flow, people inside to proceed to safe exit as directed. • Responsible person to check isolation status of SPS and check pressure in adjacent water main. • Isolate water main upstream if break is the suspected cause.
People overcome by gas	<ul style="list-style-type: none"> • Responsible person to ring 000 and ask for fire brigade and ambulance. • Conscious people to put on their oxygen self-rescuer first, and then assist affected people with theirs and help them to the safe exit. • If gas monitor reads < 5% LEL, two standby persons will enter from safest manhole using BA to attempt rescue. Two will remain at the surface to man the rope access system. • In all instances, at least one standby persons will remain at the surface to man the rope access system and administer CPR once affected people are on the surface.
Explosion.	<ul style="list-style-type: none"> • Responsible person to ring 000 and ask for fire brigade and ambulance. • Standby persons to extinguish from surface and then check on status of persons inside. • If gas monitor reads < 5% LEL, two standby persons will enter from safest manhole using BA to attempt rescue. Two will remain at the surface to man the rope access system.
Physical injury	<ul style="list-style-type: none"> • Notify responsible person of need to evacuate and if assistance is required from standby persons. • The first aider inside is to administer initial first aid and all to assist affected person to reach rope access system. • Standby persons to lift affected persons. • Responsible person to ring 000 depending on severity of injury.

* Risk becomes an incident if it happens and must be recorded in the Incident Recording System after the response.

Rescue and first aid equipment

A rope access system is erected at each emergency exit.

Each person inside has an oxygen self-rescuer.

There is an ABE rated powder fire extinguisher and an emergency evacuation first aid kit located on the back of each vehicle.

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Communication method between staff Eg: Mobile Phone, two way radio, and satellite phone.

Standby persons will monitor a wireless system at the entry, exit point and emergency exit. The responsible person and standby persons will keep in contact by mobile phone.

Method of accounting for people Eg: Confined Space entry permit.

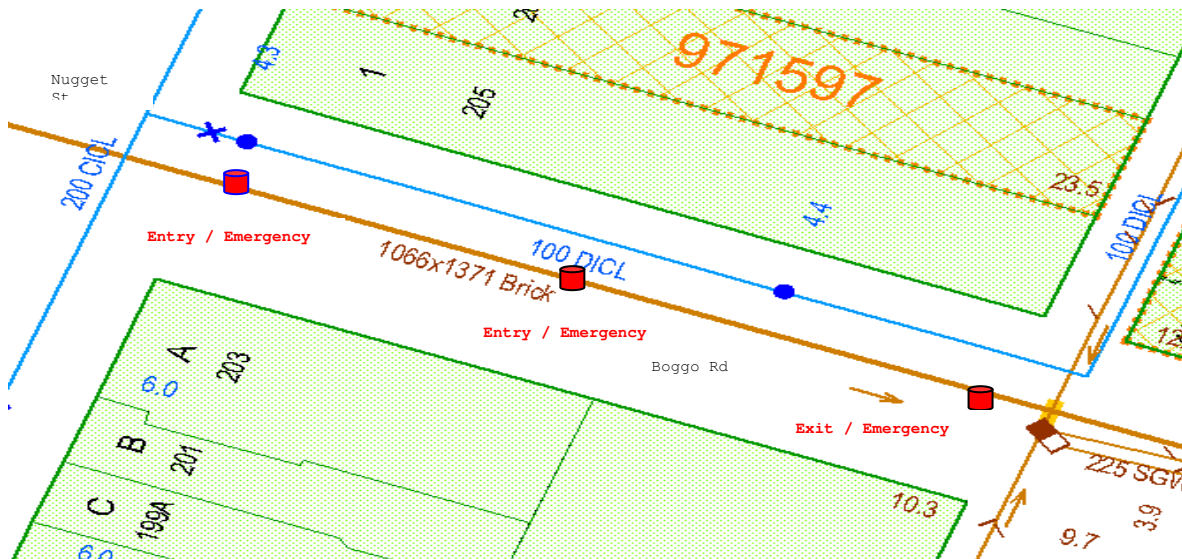
The responsible person will record the time on the entry permit as each person exits.

Site Information To be used where there is a significant difference between sites. Add or delete rows as required.

Address	Reference (Street directory)	Description	Emergency services access from:
100 m length of sewer from the Boggo Rd / Nugget St intersection to 24 Boggo Rd.	251 / H12	1066 x 1371 mm Sewer pipe.	Nugget St end.
Other useful information to aid emergency response			
<ul style="list-style-type: none"> Flow isolation is from the upstream SPS 4 in the park at the western end of Nugget St. Detention is four hours from isolation time. Flow is 50 mm deep after isolation. A 100 mm water main runs parallel to the sewer under Boggo Rd from a 200 mm main running at 90° under Nugget St. The roads are residential with light traffic flow. 			

Emergency exits

Work in complex confined spaces (eg: traversing) may also require map showing emergency exits, etc. Add if required.



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Attachment 4 Example of an ITM schedule including confined space related items

Item	Class	Description	Name / asset or serial no	Location	Type of ITM	Acceptance criteria	Frequency of test	Person responsible	Qualification	July		Aug		Sept	
										D	C	D	C	D	C
1	Workplace	Valve chamber	POOS	Various as per maintenance program	Visual Inspection.	As per Maximo work order	As per maintenance program.	Col Iform.	CS Card					✓	
2		Sewage Pumping Stations	SPS 12	End of Nugget St	Check access, security, valve and pump function.	As per Maximo work order.	As per maintenance program.	Elle Vatedreservoir	CS Card FMIHA, LOTO.			✓			
			SPS 13	Boggabri Car Park											
	SPS 14	Polly Waffle Park													
3	Work Methods	SWMS Work in Confined Space	SWMS 14	Safety folder	Check for conformance with HSP-001.	No non-conformances.	Yearly.	Di Gester.	CS Card, Mgt Overview						
4		Traverse plan	Boggo Rd Section 1	Boggo Rd	Controls applied, roles signed off, CS cards are current.	No non-conformances.	Yearly	Des Alinationplant.	CS Card, FMIHA, LOTO, Mgt overview.			✓			
5		CS Competency	Col Iform	As per work order for August	Observation check.	As per Observation Check sheet.	Yearly.	Resp Manager: Ces Chamber	CS Card, Validation Workshop, Mgt Overview			✓			
6			Stand Jurd	As per work order for August								✓			
7	Plant and equipment	Ventilation fan	Whitehall : AN: 56766	Bondi Cigar Depot, shed 5	Fan speed/ test and tag lead.	1200 l/s air flow. Lead is insulated.	Every six months.	Phil Tration.	CS Card					✓	
8		Gas Monitor	Multi Check 2000: AN: 44365	Bondi Cigar Depot, shed 4	Calibration	4/- 10% of the gas cylinder concentrations within 60 seconds.	Every six months.	Gaz Tester.	Specialist Gas Tester course	✓		✓		✓	
9			Safe check 100: AN: 2345	Bondi Cigar Depot, shed 4	Response test.					✓		✓		✓	
10		Oxygen self rescuer	Fenzy Oxy Pro – AN 3456	Bondi Cigar Depot, shed 4	Visual inspection.	In date/ no visible deterioration.	Six Months.	O. Dourscrubber.	CS Card					✓	
11		Tripod	Miller 2.7 m: AN: 3231	Bondi Cigar Depot, shed 5	Visual inspection / test locking mechanism, foot pads and hinges.	As per Miller instruction & Inspection Manual.	Before the start of every job.	Sue Erchoke.	CS Card	✓		✓		✓	
12		Radios	Motorola AN: 345	Bondi Cigar Depot, shed 4	Battery test, visual inspection, test in tunnel.	Voice is clear / No drop outs or static.	Before the start of every job.	Fae Cal.	CS Card	✓		✓		✓	
13	Peoples Health	Fitness assessment	Col Iform	Bondi Cigar Depot	Fitness to work in CS.	As per Confined Space Fitness Guidelines.	Yearly.	Di Fuser-Health Professional (to be arranged by Ces Chamber).	Medical Practitioner or Nurse	✓					
14			Stan Jurd	Bondi Cigar Depot						✓					

D = Due, C = Complete

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Appendix 5 Confined space communication options

Confined space communication options based on the quality of sight and sound

Option

1. Verbal with hand signal or whistle back up.
2. Hand signal with whistle back up.
3. Two way radio with hand signal or whistle back up.
4. Hardwire or wireless systems with whistle back up.

Sound / sight of standby person

Good



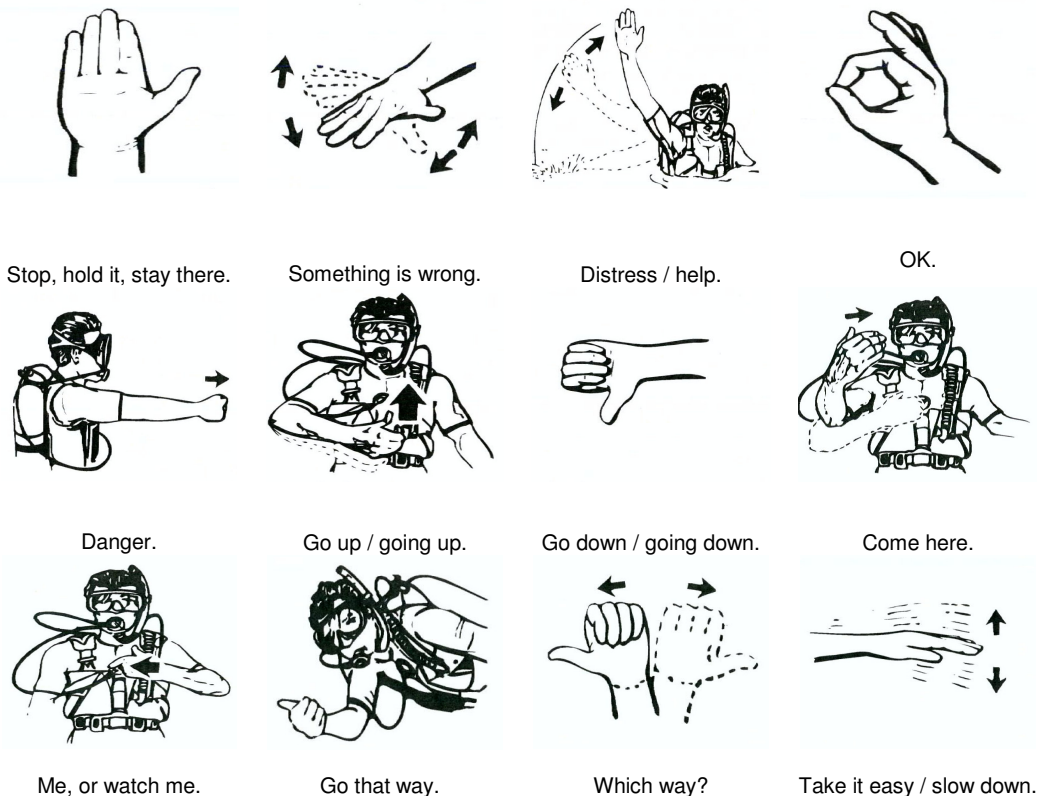
Restricted

Whistle code:

- One Blast = OK / Proceed.
- Two Blasts = Stop / Wait.
- Continuous = Evacuate.

Hand signal code:

From AS/NZS 2299:1 2007 Occupational diving operations.



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