



EAST RIDING

OF YORKSHIRE COUNCIL

Managing Confined Spaces

Safety Guidance Document

Lead Directorate and Service:	Corporate Resources - Human Resources, Safety Services
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1. Background

- 1.1 This safety guidance document provides information on the management of, and working within confined spaces. A confined space is any space of an enclosed nature with limited openings, where there is a risk of serious injury from hazardous substances or dangerous conditions in and around the confined space. Examples are; chambers, tanks, silos, pits, sewers, vats, flues, wells, ducts or poorly ventilated rooms (eg basements, roof spaces).

2. Foreword

- 2.1 In accordance with the Council's Corporate Safety Policy, the Council is committed to pursuing continual improvements in health and safety. This safety guidance document supports this commitment and forms part of the Council's health and safety management system.

3. Implementation

- 3.1 Directorates are responsible for the implementation of this safety guidance document and communication of its content as appropriate.
- 3.2 This safety guidance document is available on the Safety Services intranet page and, where employees do not have access to the Council's intranet, via their Line Manager/Headteacher.
- 3.3 The Council relies on the cooperation of all employees and trade unions for the successful implementation of this safety guidance document.
- 3.4 A review of this safety guidance document will be undertaken after three years after its implementation or where significant changes in legislation or working practices deem this appropriate.

4. Roles and Responsibilities

4.1 Directors and Heads of Service

- 4.1.1 Directors and Heads of Services are ultimately responsible and accountable to the Chief Executive for ensuring this safety guidance document is issued to their management team.

4.2. Managers/Headteachers

- 4.2.1 Managers/Headteachers need to consider this guidance in relation to work carried out within their control. Appendix 1 is a step by step list of potential duties.
- 4.2.2 Managers/Headteachers are responsible for achieving the objectives of this safety guidance document where relevant to their area of service delivery and are responsible for ensuring that:
- The information contained within this safety guidance document is implemented and complied with;

- Confined spaces have been identified and risk assessed by a competent person and that they are controlled (including securing against unauthorised access);
- Control measures (safe systems of work) are introduced to reduce any potential risks to a reasonable level;
- Relevant information, instruction and training is provided to staff to enable them to undertake their job safely and without risk;
- Persons involved in work that requires entry into confined spaces, are medically fit, competent to carry out that work and have received adequate, information, instruction and training;
- A competent person prior to any confined space entry undertakes a risk assessment and that safe systems of work are developed including entry permits and a rescue plan;
- Any equipment provided for safety in connection with confined spaces is appropriate for the purpose and adequately maintained;
- They suspend all work if in their opinion the safe systems of work or control and emergency measures are not being complied with.

4.3 Employees

4.3.1 Employees must ensure they carry out assigned tasks and duties in accordance with information, instruction, training and agreed safe systems of work. Specifically they should ensure:

- This safety guidance document is complied with;
- They **NEVER** enter a confined space unless they have been deemed competent and have been trained and authorised to do so;
- Their own health and safety and that of others are not put at risk by their actions,

4.4 Competent Persons

4.4.1 **ONLY** those employees deemed competent who have been trained and authorised may enter a confined space. They **MUST** ensure:

- They are medically fit to undertake work in confined spaces and must inform their Line Manager/Supervisor where medical conditions would affect working in a confined space;
- They complete risk assessments prior to assessing or entering a confined space;
- They have in place and understand the safe system of work that they have to use whilst working in a confined space;
- The degree of supervision required for any confined space entry has been based on the findings of the risk assessment;
- Where the level of risk requires the appointment of additional competent person(s) to supervise the work, that they remain present at all times whilst the work is being undertaken;
- They comply with **ALL** control measures contained within the safe system of work;
- They report any equipment defects, worsening conditions or new hazards encountered within the confined space to their Supervisor. If necessary withdraw from the confined space;
- Their own health and safety and that of others are not put at risk by their actions.

4.5 Competent Persons (Supervisors)

The Supervisor's role is to ensure that:

- The permit to work system operates properly;
- All necessary safety precautions are taken prior to, during and after the work is undertaken;
- Anyone in the vicinity of the confined space is informed of the work being done;
- Entry into the confined space is controlled;
- Communications with the employees is maintained;
- Emergency procedures are in place;
- Work is suspended if, in their opinion, the safe systems of work or control and emergency measures are not being complied with.

4.6 Safety Services

- 4.6.1 The primary function of Safety Services is to support the Council and its employees by providing professional, authoritative, impartial advice on all aspects of health, safety and wellbeing. Where Managers/Headteachers require further assistance, Safety Services will advise on achieving compliance with this safety guidance document.

5. Arrangements

5.1 What is a Confined Space?

- 5.1.1 The appearance of a confined space can be misleadingly inoffensive. By their nature confined spaces are places where there is restricted access and the opportunity for the atmosphere within them to become hazardous to life. All too often the first sign of danger is when an employee collapses within the confined space. Frequently, the initial reaction of colleagues is to provide assistance, making rescue attempts and becoming casualties themselves. A number of people die each year in confined spaces and approximately half of them are attempting a rescue. Confined spaces are found in a wide range of industries and buildings, some more obvious than others.

- 5.1.2 A confined space can be any space with limited access/egress where there is a risk of death or serious injury from hazardous substances or dangerous conditions. Some are easy to identify

- Storage tanks;
- Biomass storage hoppers storing heating fuels;
- Silos;
- Reactor vessels;
- Enclosed drains;
- Sewers.

- 5.1.3 Others that are less obvious, but can be equally as dangerous

- Open topped chambers;
- Vats;
- Flues;
- Wells;

- Ducts;
- Poorly or unventilated rooms, eg basements/roof voids;
- Rooms containing hazardous processes.

5.2 What are the dangers from confined spaces?

5.2.1 The dangers in confined spaces can exist for a variety of reasons, including

- Contamination from previous contents;
- A lack of oxygen due to chemical reaction or displacement;
- Toxic gas, fume or vapour accumulating from leaks, engine powered equipment or biological or chemical action;
- Fire and explosion from flammable vapours, dusts or excess oxygen;
- Liquids or free flowing solids suddenly filling the space;
- Very hot/cold working conditions leading to dangerous changes in body temperature.

5.2.2 These dangers can be already present in the confined space, but may also arise because of the work being carried out. Leaks, a failure to effectively isolate plant and changing environmental conditions can also give rise to some of these dangers.

5.2.3 The enclosure of work and working space can also increase other dangers that arise through the work being undertaken

- Machinery being used may require special precautions such as dust extraction or special precautions against electric shock or generation of sparks requiring it to be intrinsically safe;
- Welding or use of volatile/flammable solvents, adhesives etc can create build ups of gases, fumes and vapours;
- If access is through manholes, escape or rescue in an emergency will be much more difficult.

5.3 Hazard Identification, Risk Assessment and Safe Systems of Work

5.3.1 All confined spaces that are identified, be they temporary or permanent will be subject to hazard identification (*See Appendix 3*) by a competent person at design stage. This will identify the potential hazards in the confined space both permanent and transient and any identified risks when working in the confined space.

5.3.2 Where there is a risk of serious injury or worse, entry into the confined space must be avoided. (*See Appendix 2 'Confined Space Procedural Flow Chart'*). However, if entry into the confined space is unavoidable, a risk assessment must be carried out by a competent person. A safe system of work must be developed and implemented with adequate emergency arrangements in place before work commences. Prerequisite staff competencies must be established at this stage.

5.3.3 Before accepting that entry into a confined space is unavoidable, you should consider alternatives.

- Is the work really necessary?
- Can the space be modified so that entry is not necessary?

- Could the work be done from the outside using remotely operated equipment, tools or cameras?

5.3.4 The design of any confined space should be such that the need to enter it for any purpose is minimised.

5.3.5 If entry cannot be avoided you must have a safe system of work. The risk assessment will identify the hazards and risks from which the control measures must be developed and put into practice. Everyone involved will have to be properly trained and instructed to ensure they know what to do and how to do it safely. The following measures are not exhaustive, but include many essential elements of a safe system of work.

5.4 Designate a Supervisor

5.4.1 Supervisors must be designated for each event and be required to take responsibility to ensure that the necessary precautions are taken and to check safety at each stage. They may need to remain present for the duration of the work.

5.4.2 If they are required to remain present, communication must be maintained with those inside the confined space at all times. Work inside the confined space must be suspended whenever the supervisor has to leave the entry point.

5.5 Are Persons Suitable for the Work?

5.5.1 Do the intended employees/contractors have sufficient experience and training for the type of work being carried out? If the risk assessment identifies space constraints, are they physically able to work safely in the space? Other factors such as claustrophobia, fitness to wear breathing apparatus or medical advice on individual capability may need to be considered.

5.5.2 Confined spaces can be physically demanding, it is essential that employees are sufficiently fit and mentally capable of fulfilling their duties.

5.6 Isolation

5.6.1 If mechanical or electrical equipment could be operated inadvertently, or if gaseous, liquid or free flowing solids could enter the space and endanger employees, systems and pipe work must be effectively isolated. The isolation must be failsafe.

5.7 Cleaning Before Entry

5.7.1 The confined space may need to be cleaned of residues or contaminants that may release fumes. Similarly gaseous residues may need to be purged with an inert gas and/or fresh air prior to entry.

5.8 Size of Entrance

5.8.1 The size of the entrance must be large enough to allow employees, wearing all the necessary equipment, to safely enter and leave the confined space. It also has to be big enough to allow ready access and egress in an emergency.

5.9 Ventilation

- 5.9.1 It may be possible to increase the supply of fresh air into the confined space by increasing the number of openings. Oxygen must never be used to 'sweeten' the atmosphere, as this will greatly increase the chance of a fire or explosion. Mechanical ventilation may be necessary and will be essential whenever equipment is used that may release fumes. Engine powered equipment must never be used in, or in the vicinity of a confined space because the exhaust fumes are so dangerous.

5.10 Testing the Atmosphere

- 5.10.1 Prior to entry into a confined space it may be necessary air sample/monitor the atmosphere to make sure it is free from inert (oxygen depleting) gases, toxic or flammable vapours and fit to breathe. A competent person using correctly calibrated detection equipment must carry out such testing. The risk assessment may also identify that continuous sampling/monitoring is necessary because conditions may change whilst work is in progress. If the sampling/monitoring do not indicate it is safe to enter then entry must not be made and the site must be closed. Reasons for not entering must be stated on the permit to work.

5.11 Special Tools and Lighting

- 5.11.1 Where there is the potential for an explosive or flammable atmosphere non-sparking tools and specially protected lighting and electrical equipment (intrinsically safe) will be required. In some circumstances, for instance in metal tanks, suitable precautions to prevent electric shock must be made including the use of low voltage equipment (less than 25 volt) and residual current devices.

5.12 Emergency Escape Breathing Apparatus (Escape Sets)

- 5.12.1 If the air inside a confined space cannot be made fit to breathe, then entry is to be denied. Escape sets must be carried by employees who are entering confined spaces as indicated by the safe system of work. These sets should have the capacity to enable persons to escape from the furthest point from the point of entry. Employees must be suitably trained in using this equipment should it be necessary. This equipment is for escape only, and must not be used for any other purposes.
- 5.12.2 Prior to use it must be ensured that the equipment is certificated and within periodic test dates, and, that each wearer has undertaken a 'facefit' test.

5.13 Preparation of Emergency Arrangements

- 5.13.1 The necessary equipment, training and practise drills must be established, and everyone involved in the entry should fully understand these and be competent in instigating these should the need arise.

5.14 Rescue Harnesses/Descent Devices

- 5.14.1 The rescue harness is primarily designed to affect the rescue whereby the casualty will be supported in a near vertical position. This makes it ideal for use in confined space environments where they may be an access/egress problem due to the size of the opening. Nearly all rescue harnesses are fitted with an attachment point to enable then

to be used as for the purposes of rescue. This point is only ever for use for rescue and should never be used as a fall arrest point.

- 5.14.2 It does not matter how good the harness is if an unsuitable point is chosen. Anchorage points should be substantial and able to withstand a minimum force of 10kN. Ideally an independent descent device should be used which will offer a means for a person to move safely from a higher to a lower position and will in turn offer a suitable means of facilitating an escape in the event of an emergency. It is vitally important that all component parts are compatible and users must have a sound working knowledge of these systems and be fully trained in their use. All items that fall under the requirements of Lifting Operations and Lifting Equipment Regulations (LOLER) must have been tested and certified as safe before they are used.

5.15 Communications

- 5.15.1 Methods of communication commensurate with the risk assessment must be put in place between the people inside the confined space and those outside must be established and to summon assistance in an emergency.
- 5.15.2 In hazardous circumstances you may need to consider the use of monitored communications and/or automatic distress signalling units.

5.16 Raising an Alarm

- 5.16.1 In the event of an emergency, provision must be made to ensure that someone is continuously stationed outside the confined space to keep watch, to communicate with those inside, and to control entry? This person will also be responsible for ensuring that assistance is summoned and to take charge of any incident occurring.

5.17 Permit to Work System

- 5.17.1 A permit to work system ensures that a formal check is undertaken to ensure that all parts of the safe system of work are in place before entry is made into a confined space. It is also a means of communication between site management, supervisors and those carrying out the hazardous work. Whoever is responsible for undertaking the work is by default responsible for ensuring a safe system of work is in place and that this is supported by a permit to work. In respect of confined space work undertaken within the council, an appointed contractor would take overall responsibility for the work activity and this would be overseen by Infrastructure and Facilities. Essential features of a permit to work system are:

- Clear identification of who may authorise permits for particular jobs with responsibility for specifying the necessary precautions and for closing the permit;
- Provision to ensure that contractors engaged to carry out the work are included;
- Training and instruction in the issue of permits;
- Monitoring and auditing to ensure the system works;
- Detailed on site procedures including supervision and monitoring.

5.18 Emergency Procedures

- 5.18.1 When things go wrong in a confined space, people are often exposed to serious and immediate danger. Effective arrangements for raising the alarm and carrying out rescue operations are essential.
- 5.18.2 Pre-determined contingency plans will depend on the nature of the confined space, the risks identified and the likely nature of an emergency rescue. The arrangements will depend on the risks, and should consider:

5.19 Communications

- 5.19.1 How can the emergency be communicated from inside the confined space to people outside so that rescue can start? Remember that this work frequently occurs outside of normal working hours and when premises are closed.

5.20 Rescue and Resuscitation Arrangements

- 5.20.1 The choice of suitable rescue and resuscitation equipment and arrangements will depend on the likely emergencies identified. Rescuers must be trained in the use of the equipment. The ability to 'self-rescue' is vitally important and should always be a priority consideration when determining emergency arrangements. Escape sets will assist in the facilitation of self-rescue, particularly in oxygen depleted/contaminated environments which could occur whilst persons are in a confined space. Those entering confined spaces with escape sets **must** be fully confident and trained in the use of this equipment. A hierarchy of rescue arrangements must be considered which includes:

- 'Non-entry rescue' where the use of equipment to remove people from the environment without rescuers having to enter the area themselves is achieved;
- Rescuers needing to enter the confined space to help the victim but this must only be done in accordance with the pre-determined plan.

- 5.20.2 Rescuers need to be properly trained people, sufficiently fit to carry out their task, ready to hand, and capable of using any equipment provided for rescue (breathing apparatus, lifelines, fire-fighting and resuscitation equipment etc). They also need to be protected against the cause of the emergency.

- 5.20.3 The emergency services must not be relied upon to provide any rescue capability: by the time they arrive at the scene it may already be too late.

5.21 Shut Down

- 5.21.1 It may be necessary for them to be able to shut down adjacent plant before attempting rescue. In this case, an emergency stop system must be in place.

5.22 First Aid

- 5.22.1 As part of planning works involving entry into confined spaces, a first aid risk assessment must be undertaken to determine if trained first aiders needed to be available to support the work activity being undertaken. .

5.23 Emergency Services

- 5.23.1 The local emergency services may need to be called for assistance. Thought should be given to making them aware of the potential for an incident and the associated hazards and risks to enable them to pre-plan operations. In any event they must be given information about the dangers when they are summoned in an emergency.

6. Managing Contractors

- 6.1 Any non-routine work planned inside a confined space within council premises must be properly planned. This begins by advising prospective contractors of any known existing or potential hazards and control measures including the requirements of any permit to work system where one exists.
- 6.2 The contractor shall provide in advance of the work, a suitable risk assessment and method statement for their activities. This will include details of any necessary air sampling/monitoring, staff competencies and emergency arrangements.
- 6.3 Building surveyors and engineers responsible for commissioning these activities should manage contractor arrangements and advise local managers of any necessary safety systems that must be in place prior to work commencing. Local managers will monitor activities (including the management of any permit to work system) to ensure that the safety systems and emergency arrangements are maintained. If there is any doubt they will retain the right to suspend work and contact the supervising officer and Safety Services.

7. Training Requirements

- 7.1 Working within confined spaces can be both arduous and dangerous. Anyone expected to enter or manage any confined space must possess relevant competencies. These will vary according to the nature of the confined space and work being undertaken. The following list of competencies should be considered:-

- Permit to work system management;
- Use of emergency escape breathing apparatus;
- Use of air monitoring/sampling equipment;
- Rescue techniques;
- First aid;
- Specialist equipment training;
- General confined space entry training.

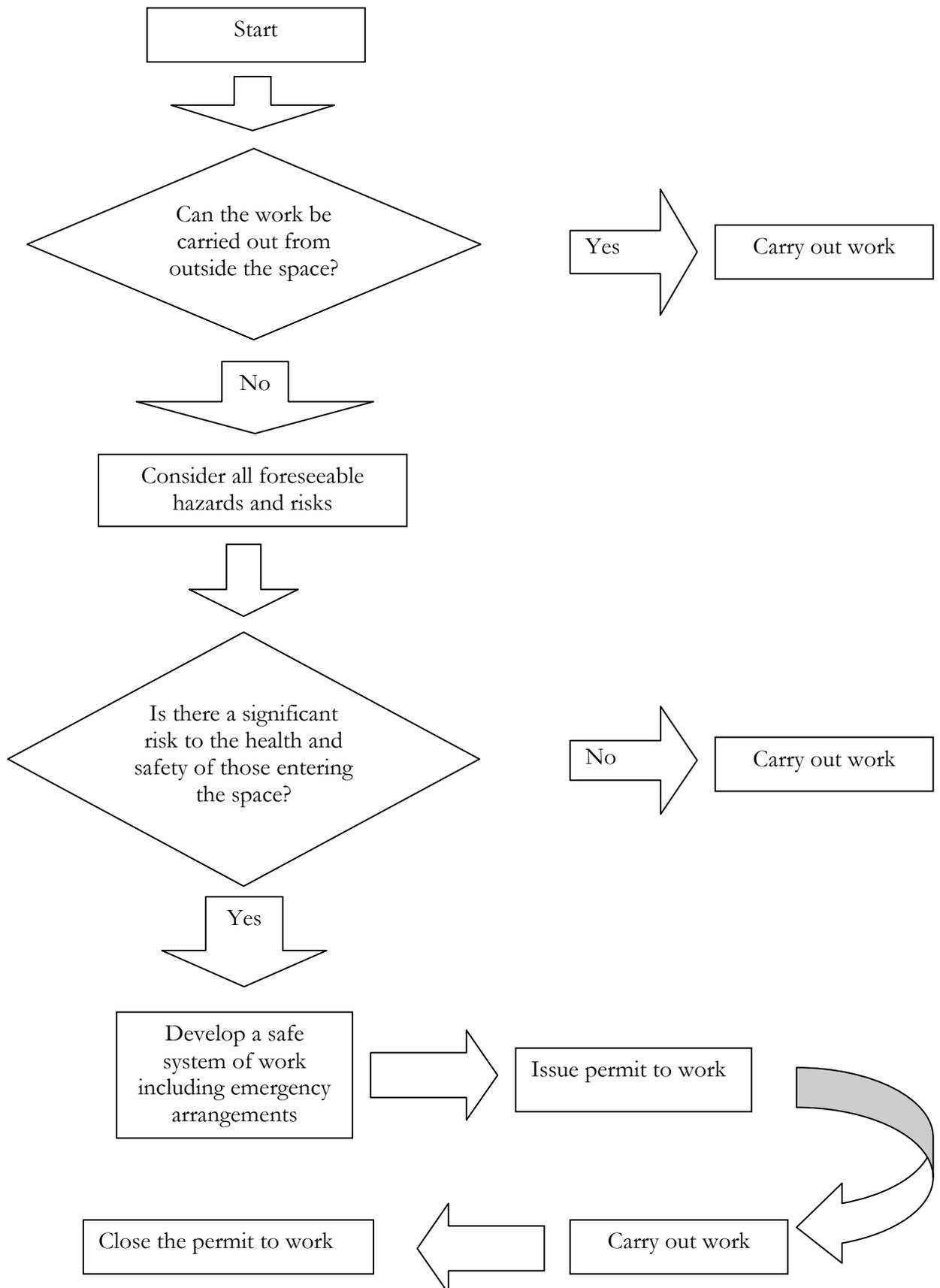
8. Accident and Incident Reporting

- 8.1 In accordance with the Council's accident/incident investigation and reporting guidelines, every Manager is responsible for, and will, investigate and report all accidents and incidents. Where required accidents falling under the criteria of the 'Reporting of Injuries, Diseases and Dangerous Occurrence Regulations' (RIDDOR) will, in accordance with the reporting procedure, be notified to the Health and Safety Executive. All accidents and incidents, regardless of if they are RIDDOR reportable will be recorded in accordance with the council's accident reporting procedure.

Appendix 1 - Step by Step List of Duties for the Appropriate Competent Person

- Step 1** If you are in control of or manage premises, you need to identify if there are any confined spaces as described under 5.1.
- Step 2** If you are unsure that an identified space meets the criteria detailed in section 5.1 then contact Safety Services on (01482) 391117 or email:
safety.services@eastriding.gov.uk
- Step 3** Once you have identified the location of confined spaces, you must ensure that a register of their locations is recorded, the spaces are 'signed' as a confined space and written procedures and physical measures are put in place to control entry in to these areas.
- Step 4** Where work may be required to be undertaken in confined spaces, you must ensure that this is only undertaken by persons who have sufficient experience and training for the type of work being carried out. If you are in any doubt then contact Safety Services on (01482) 391117.
- Step 5** Control and monitor all contractors attending site to undertake work to ensure that work is not undertaken in confined spaces without the necessary competencies/arrangements being in place.

Appendix 2 - Confined Space Procedural Flow Chart



Appendix 3 - Confined Space Hazard Identification Form

To be completed by the appropriate Competent Person (eg Building Surveyor, Engineer, Architect, Technician or Premises Manager)

Location and description of confined space	

Hazard	Yes	No	Comment and/or recommended control measure
Working at height within the confined space?			
Fire or explosion?			
Temperature extremes?			
Loss of consciousness or asphyxiation due to:			
Gas?			
Fume?			
Vapour?			
Lack of oxygen?			
Drowning due to an increase in the level of any liquid?			
Asphyxiation/entrapment due to free flowing solids?			
Entrapment/entanglement in moving machinery?			

Appendix 4 - Permit to Work

TO BE USED BY FULLY TRAINED PERSONS ENTERING INTO CONFINED SPACES

Note: Staff not trained will not be allowed and must not enter confined spaces

Permit Number _____

I authorise the following work/entry to commence subject to the risk assessment and method statement (safe system of work) and implementation of the associated safety precautions.

Authorising Officer:-

Date:-

Print Name :-

Maximum Validity

Location and description of work

No of Operatives

Valid from (date/time) to (date/time)

This permit is only valid when all sections are complete. If you are in doubt or don't understand, then please ask. ***Please ensure that you sign this permit to work overleaf.***

Do not proceed with your work until your permit has been authorised by the relevant member of staff. By accepting this permit you agree to the requirements of the East Riding of Yorkshire Council Confined Spaces Guide.

Please ***initial*** the appropriate entries below

Hazards to be aware of and precautions to be taken	Yes	No	N/A
Are you qualified /trained to undertake this work?			
Has confined space been isolated from all connected pipe work?			
Has confined space been purged with steam/water/air?			
Has confined space been electrically isolated and locked off?			
Has confined space been mechanically isolated and locked off?			
Is confined space temperature below 3°C and above 5°C?			
Is the entrance big enough to allow access and egress in an emergency?			
Is the supply of breathable air assured or is ventilation required?			
Is the means of access to and escape from the confined space acceptable?			
Is appropriately calibrated gas detection equipment, available, in good working order and are individuals trained in its use?			
Are appropriate 'escape sets' available and in good working order?			

Is the safety line/tripod/harness and any other back up equipment in place?			
Are the emergency arrangements in place?			
Is a trained standby person at point of entry?			

List below any other precautions/safety equipment required		
Is a test of the atmosphere required (minimum 5 minute period must be undertaken)	Yes	No
TIME OF TEST:	Pass	Fail
Oxygen (O ₂)	Pass	Fail
Carbon Monoxide (CO)	Pass	Fail
Hydrogen Sulphide (H ₂ S)	Pass	Fail
Flammability	Pass	Fail
Other (specify)	Pass	Fail
Is continuous air monitoring required?		

PREPARATION COMPLETED; ACCEPTANCE AND AUTHORISATION			
I verify the above location has been examined, any precautions etc. required by the risk assessment have been taken. All operatives are certified competent and have been trained and instructed in any site specific procedures and hazards. I accept responsibility for the work to be carried out.			
Person responsible for work:			
	<i>Print Name</i>		<i>Signature</i>
Date:		Time:	

EXTENSION			
I hereby certify that I have re-examined the situation covered by this Permit and authorise its extension to the Time and Date noted below			
Permit extended to:		Signature of Authorised Permit issuer	Any additional precautions to be taken
Time	Date		

HAND BACK AND CANCELLATION PROCEDURES

I confirm that the work has been completed/partially completed, checked by myself and the area left in a safe and tidy condition. (Please delete accordingly)

Person responsible for work		Date and Time	
-----------------------------	--	---------------	--



I have inspected the finished work and hereby cancel this permit.

Authorised Permit Issuer		Date and Time	
--------------------------	--	---------------	--