



ESTATES DEPARTMENT




Safe Systems of Work

Confined Space Access and Safe Working Procedure

Rev 3

Document History

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1	14/05/2018	Procedure developed by Matt Cheney and issued as a departmental procedural document in replacement of the previously titled 'Permit to Work Procedure'.	MC
2	01/10/2018	Added 3.1.9 Sibson void to schedule, section 3	MC
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SECTION 1

Estates Confined Space Safety

1.1 Introduction & Scope

1.1.1 This procedure has been developed as part of a suite of Safe Systems of Work (SSoW) for the University of Kent's Estates Department. The person with overall responsibility for controlling and updating these procedures is the Assistant Director of Estates (Maintenance & Compliance) and is deemed to be the duty holder.

1.1.2 Compliance with this procedure is mandatory in order to establish safe working practices for the protection of persons under the management of the Estates Department. Activities involve access to confined spaces, or the use of any access or monitoring equipment within confined spaces, at the University of Kent Campuses. The definition of a confined space and a specified risk are as follows;

'Confined Space' - A confined space is defined by HSE as 'any space of an enclosed nature where there is a risk of death or serious injury from hazardous substances or dangerous conditions (e.g. lack of oxygen)'. Such spaces will include any chamber, tank, vat, silo, pit trench, pipe, sewer, flue or well. It is worthy of note that some places may only become confined spaces when work is carried out, or during their construction, fabrication or subsequent modification.

'Specified Risks' are defined in Regulation 2 of the Confined Spaces Regulations 1997. Generally they can be described as those which pose a risk of serious injury arising from a fire or explosion; the loss of consciousness arising from an increase in body temperature; or the loss of consciousness or asphyxiation arising from gas, fume, vapour or the lack of oxygen.

1.1.3 The procedure governs work associated with University of Kent and applies to both employees of the University of Kent's Estates Department and those contractors and suppliers engaged by University of Kent, directly or via third parties, to work on its sites and premises.

1.1.4 All persons who are, or who may be, associated with the planning, monitoring, construction, inspection, maintenance of confined spaces (including access and egress) shall comply with the University of Kent's Confined Space Access and Safe Working Procedure, which observe the following statutory provisions:

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- The Confined Spaces Regulations 1997
- Provision and Use of Work Equipment Regulations 1998
- Personal Protective Equipment Regulations 2002
- Lifting Operations and Lifting Equipment Regulations 1998
- The Health and Safety at Work Act 1974 and subordinate legislation;
- The Management of Health and Safety at Work Regulations 1999

1.1.5 Any work undertaken may also be governed by University of Kent policies and safety rules other than those for Confined Space Access and Safe Working, such as those applying to general occupational health and safety matters and not least the requirement that work activities are subjected to risk assessment and method statement.

1.1.6 This procedure outlines the University of Kent's Safety rules and arrangements to achieve compliance of the Confined Spaces Regulations 1997 and to ensure employees and contractors are not exposed to unnecessary risks associated with working within confined spaces.

1.1.7 These arrangements will assist employees with assessing the risks associated with the various scenarios where it is difficult to eliminate working in Confined Spaces. This procedure also outlines the duties of those persons engaging in confined space activities to enable them to work safely.

1.1.8 The University of Kent recognises that a number of facilities/locations fall within the definition of a confined space and as staff may be required to enter such spaces as part of their duties, this procedure has been developed to:

- Ensure entry into confined spaces is avoided wherever possible;
- Ensure that all confined spaces and hazards likely to be encountered are known (see section 3)
- Ensure that, where entry is unavoidable, the activity is subjected to a suitable and sufficient risk assessment and that only trained and fully equipped staff enter a confined space;
- Set the health, safety, and principles for confined space entry and ensure that these are communicated to staff;
- Establish the emergency arrangements as necessary for confined space entry (minimum of 3 person team);
- Ensure that the University's Permit to Work system is followed when any confined space activity is undertaken;
- Ensure that management and staff are fully aware of the duties under H&S law.

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1.1.9 This procedure covers all contractors and staff working on behalf of the Estates Department within all University of Kent Campuses who are required to access any confined space or to carry out any work activities within a confined space.

The following areas are designated as confined spaces where there is a reasonably foreseeable risk to the Health and Safety of persons from hazardous substances or conditions within the space or nearby: These require a specific risk assessment and work method detailing the required controls and should be managed through the confined spaces access permit;

- Tanks
- Vessels
- Silos
- Pits
- Sewers
- Culverts
- Lift shafts
- Service Ducts

1.2 Application of the Estates Confined Space Access and Safe Working Procedure

1.2.1 All persons who have cause in the normal course of their duties to be involved with or part of this procedure, shall be provided with a copy of this procedure by the appropriate manager.

1.2.2 Contractors or any other persons working on University property who have cause to be involved with work outlined in 1.1.4 above, will be supplied with a copy of this procedure by the appropriate manager

1.2.3 All employees and persons issued with this procedure shall sign a receipt for their copy and shall keep them in good condition and have them available for reference.

1.3 Responsibilities and Competency

Those having specific responsibilities for confined space safety matters include the following:

Assistant Director (Maintenance & Compliance) is the Duty Holder, who is the person responsible for controlling Work activities under the Confined Space Regulations 1997 and updating and maintaining these procedures.

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Estates Maintenance Manager (EMM) - A person who fulfils the requirements of a Competent Person is over 21 years of age, who is principally of an engineering/construction discipline or who has significant experience and who has had adequate training to work without danger and accepts responsibility for the safety of others working under his direction.

Estates Project Manager (EPM) - A person who fulfils the requirements of a Competent Person is over 21 years of age, who is principally of an engineering/construction discipline or who has significant experience and who has had adequate training to work without danger and accepts responsibility for the safety of others working under his direction.

The EMM/EPM shall be considered Authorised Persons (AP) following written authority from the Duty Holder.

Apart from the EMM and EPM other positions may also be classified as Authorised Persons and shall receive written authority from the duty holder.

The AP will ensure compliance with the requirements of the Confined Spaces Regulations 1997 and this safe working procedure by;

- Identifying confined spaces while specifying work (see section 3)
- Carrying out a risk assessment considering the task and the location of work.
- Agreeing a safe working procedure with those carrying out the work and issuing an appropriate permit;
- Ensuring the control measures identified in the risk assessment and permit are communicated to those carrying out the work and that those control measures have been understood.

Authorised Persons shall hold recognised formal qualifications beyond their experience with a minimum of City & Guilds or equivalent. Where formal City & Guilds type qualifications have not been attained a recognised ONC, HNC, HND or Degree relevant to the AP activity will satisfy this requirement.

Competent Person (CP) - A person who is essentially of an engineering/construction discipline and has adequate technical knowledge and experience of the spaces, system or equipment to be worked on to avoid danger to himself or others for whom he may be responsible.

Competent Person(s) shall comply with this procedure by;

- Carrying out their roles safely in line with their training

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- Complying with all requirements set out in the risk assessment and the relevant permit.
- Ensuring that any specified monitoring has been carried out and clearance given that it is safe to commence or continue access. Identify where the use of a personal monitor is required.
- In the event of an emergency or suspected emergency initiate the agreed actions identified in the safe working procedure with the AP.

The AP, and the maintenance trades staff at the University of Kent are deemed Competent Persons by reason of training and experience. See also Section 1.10.

All contractors shall have evidence of having received appropriate training and provide a written method statement and risk assessment for review by AP and have a valid Permit-to-Work prior to undertaking any work associated with Excavations. Contractors will comply with this procedure and the duties outlined under Competent Person(s) in this subsection.

1.4 Standard Operating Procedures

Some activities or equipment may have standard operating procedures or have similar documentation in place, developed by the Estates Department, to ensure safe working practices and methods are adopted. The introduction of standard operating procedures can play a positive role in risk reduction and may alleviate the requirement of a Permit to Work in confined spaces. Where it is identified that a Standard Operating Procedure is required it will be the responsibility of the Authorised Person (AP) to ensure this is in place.

1.5 Dangerous Occurrences or Accidents

All Dangerous Occurrences and Accidents shall be immediately reported to line management, to the Health and Safety Advisor and to the AP.

1.6 Operational Restrictions

Operational restrictions identified from any source are to be registered with the AP. This may include, but may not be limited to:

- Health and Safety Executive (HSE) safety alerts
- Manufacturer's product safety alerts
- Failures of monitoring equipment during operation
- Third party reports and other safety alerts.

1.7 Objection to Instructions

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If a person has an objection on safety grounds to instructions received for work in, or the operation of, any equipment used for confined space access, he/she shall make their objection known to their line manager. The manager shall consider the matter immediately, referring to the AP if the matter cannot otherwise be resolved.

1.8 Signs and Barriers

Responsibility for placing in position or moving any signs or barriers required in connection with the issuing of written work authorisation documents rests with the AP/Competent Person (CP).

1.9 Information, Instruction & Training

Arrangements shall be made by the University to ensure:

- That all employees concerned are adequately trained, informed and instructed as to the property, equipment and activities which are affected by particular aspects of work and which legal requirements, safety procedures and related documents still apply.
- That other persons that are not employees but who may be affected by the operations or work also received adequate information, instruction and training where appropriate.

Never work within any confined space or attempt to gain access to any such space unless you have received the necessary training, have appropriate experience and have been authorised to undertake the work.

1.10 Review of Estates Department Confined Space Access and Safe Working Procedure

Due to the nature of any work undertaken within confined spaces this procedure will be under constant review, updated and amended accordingly.

SECTION 2

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Confined Space Access and Safe Working Procedure

Safe Access to Confined Spaces

2.1 Procedure

Prior to accessing any confined space a suitable and sufficient assessment of the risks must be completed in accordance with Section 1 of this procedure and with the necessary control measures communicated to all staff involved in the activity.

It is the responsibility of the AP to ensure a risk assessment is completed and a safe system of work is communicated.

This risk assessment will determine the required control measures and safe system of work to be adhered to for the duration of the activity. The main elements that may be considered to form a safe system of work include;

- Level of supervision
- Competence and number of staff for the specified work
- Communications necessary for the planned access and in the event of emergency
- Any required testing or continuous monitoring of the atmosphere
- Purging to eliminate any hazardous substances
- Ventilation to disperse hazardous substances or control temperature or humidity
- Removing residues such as sludge from a tank
- Isolation from solids, liquids and gases and other flowing materials
- Isolation from electrical and mechanical equipment
- Selection and use of suitable equipment, both for carrying out the work and for the potential hazards. E.g. intrinsically safe
- Personal and respiratory protective equipment including escape breathing apparatus
- Access and egress, including in an emergency
- Fire Prevention
- Lighting, including emergency lighting
- Prevention of static electricity
- Limited working time, including rest area and drinking water
- Permit to Work

Where specified, by the risk assessment, a Permit to Work shall be prepared by the AP which will specify all the precautions taken, including isolation, draining, purging and ventilation. The Permit shall also detail any action required from the recipient of the permit prior to the start of work and any specified periods or stages during the work. This may include

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receiving satisfactory air monitoring results, ventilation in service, temperature limits, etc.

2.2 Prior Considerations to Undertaking Work

Before any work is undertaken where it may be perceived that an employee will need to access 'a confined space', a risk assessment to identify the hazards involved in undertaking the work needs to be carried out, ensuring the legal duties identified by the Confined Spaces Regulations are adhered to, i.e.:

- Avoid entry to confined spaces, e.g. by doing the work from the outside;
- If entry to a confined space is unavoidable, follow a Safe System of Work; and
- Put in place adequate emergency arrangements before the work starts

2.3 Factors to be Assessed

If it is not reasonably practicable to avoid the need to work in a confined space the AP must assess the risks connected with entering or working in the space. The risk assessment should identify the risks to those entering or working there, and also any others, for example other workers including contractors and the general public in the vicinity who could be affected by the work to be undertaken. The risk assessment must be carried out by someone competent to do so.

Where a number of confined spaces (e.g. sewers or manholes) are broadly the same, in terms of the conditions and the activities being carried out, and if the risks and measures to deal with them are the same, it may be possible to devise a 'model' or generic risk assessment covering them all. Any differences in particular cases that would alter the conclusions of the model risk assessment must be identified. Failure to include relevant information in the risk assessment could lead to inadequate precautions in the subsequent Safe System of Work.

The Hazards that the Confined Spaces Regulations address arise through the combination of the confined nature of the workplace and the possible presence of substances or conditions which, taken together, can increase the risk to safety or health.

The most likely hazards encountered are;

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- CHEMICAL - Flammable substances and oxygen enrichment which can introduce a risk of fire or explosion.
- THERMAL - Excessive heat which can lead to a dangerous rise in body temperature and cause heat stress. Where action is not taken to cool the body there is a risk of heat stroke and unconsciousness.
- GAS - Toxic gas, fume or vapour, the presence of which, can lead to asphyxia or unconsciousness.
- OXYGEN - Oxygen deficiency again leading to potential asphyxia or unconsciousness
- LIQUIDS - The ingress or presence of liquids. Liquids can flow into the Confined Space and lead to drowning even in a small amount of liquid. The presence of liquid can also lead to other serious injuries or health effects depending on the nature of the liquid.
- SOLIDS - Solid materials which can flow into the Confined Space can submerge a person, preventing breathing. These solids are substances in a granular or powder form.

You should assess the general condition of the confined space to identify what hazards may be present and which of these may pose a problem. Consideration should be given to;

- Contamination from plant, processes or leaks (Gases or liquids) or where land may have been contaminated by substances.
- Methane build up which can occur from a number of sources.
- Oxygen deficiency and oxygen enrichment, where the concentration of oxygen in the atmosphere varies significantly from normal (i.e. 20.9%)
- Physical dimensions and the layout of the Confined Space.

You should also ensure that you assess the hazards that may arise directly from the work to be undertaken in the Confined Space. The work itself may produce the hazard, or conditions may become hazardous when the work is done. Some of the main hazards that may be introduced into a space that may otherwise be safe include;

- Cleaning chemicals which could affect the atmosphere directly or interact with residual substances.
- Sources of ignition. Welding could act as a source of ignition for flammable gases, vapours, dusts, plastics and many other materials which may burn and lead to fire or explosion.
- Increasing temperature could arise from hot work within the confined space. PPE can also affect the thermal comfort of workers.

2.4 Confined Space Entry

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The Permit Holder must ensure they fulfil the requirements of the safe system of work and permit to work and that these requirements continue to be met for the duration of the work. This shall include the stationing of a 'top man' whose prime responsibilities are;

- Communication with the entry team (e.g. 2-way radios)
- Instructing staff to terminate the entry if there is any suggestion that entry may be compromised
- Summoning emergency assistance if required.

In the event of emergency or unexpected change in conditions, then all personnel shall evacuate the confined space by the quickest practical means.

Prior to entry to a confined space an air test, using suitable and approved equipment with a current calibration certificate, must be conducted to establish there are adequate oxygen levels and to ensure the absence of toxic or flammable gases for safe entry. This is to be done by the AP whilst completing the permit and these readings must be logged on the Permit to Work.

The external atmosphere around the opening should be monitored first, and if the results are satisfactory, internal monitoring should be carried out by lowering the gas monitor into the confined space before it is occupied.

Air monitoring apparatus must be within its specified calibration date and shall be checked by the user prior to conducting any air testing. Where a fault is identified with equipment or the calibration date has expired this equipment must be immediately removed from service until repaired or replaced.

If entry into the confined space is necessary to carry out the tests, breathing apparatus or other RPE must be worn.

2.5 Emergency Arrangements

The emergency arrangements will be agreed with the AP prior to issue of a Permit to Work and will incorporate responses to the potential emergency conditions identified in the Risk Assessment. These could include, and must be immediately available and tested prior to entry;

- Emergency Lighting (i.e. intrinsically safe battery torches)
- Emergency communications
- Emergency evacuation equipment such as hoists for lifting out injured or ill team members.

2.6 Urgent or Unexpected Access to Confined Spaces

If unplanned work in confined spaces is deemed to be urgent, particularly outside of normal working hours, then access must not take place without the requirements of this policy being met. Alternative arrangements should be made to minimise the effect of the problem such as loss of external services. Where possible, the task should be delayed until the next working day when it can be properly assessed. In extreme circumstances, the AP shall be contacted so that a risk assessment can be carried out and a Safe Working Procedure can be agreed and a Permit to Work can be prepared as required. This is to ensure compliance with the Confined Spaces Regulations 1997.

Fault-finding work in particular could lead Estates maintenance staff into unexpected potential access into confined spaces, including change of building or conditions. Staff will have completed training to enable them to question whether a location could be considered a confined space. They are therefore required to withdraw and seek advice and not to continue the work.

2.7 Training

Appropriate training has been identified for;

- Staff entering confined spaces
- Staff who do not enter, but carry out the role of 'top man'
- Staff who specify the work to be done, carry out risk assessments, prepare safe working procedures or assess method statements and prepare Permits to Work.

Training shall be identified by the staff members' manager and arranged through the Estates Training and Development Officer.

SECTION 3

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Confined Space Access and Safe Working Procedure

Schedules of Confined Spaces

3.1 Canterbury Campus

All work within a confined space shall be subject to a Permit to Work. Although not a definitive list, the examples below indicate areas considered to be confined spaces.

3.1.1. Storage tanks

- a) Oil tanks – Brotherhood Boiler house & Ingram
- b) Water tanks – any tank where total access is possible.

3.1.2. Sewage Pumping Chambers

- a) Parkwood Road Main Sewage Foul Water Pumping Station
- b) East Oat Foul Water Pumping Station
- c) Gulbenkian Foul Water Pumping Station
- d) Kemsdale Court Foul Water Pumping Station
- e) Sibson x2 Foul Water & x2 Surface Water pumps
- f) Turin College x2 Foul Water Pumping Stations

3.1.3. Manholes

- a) Any manhole where total access is possible.

3.1.4. Boilers

- a) Brotherhood Boiler House

3.1.5. Lift pits

- a) Any lift where total access is possible.

3.1.6. HTHW ducts

- a) All external ducts.

Note: From 2012 the central campus HTHW pipework in ducts became mostly redundant/disconnected. Boiler House, Main Library, Eliot & Darwin have local sections of duct and chambers with live HTHW pipework. Ingram branch (including extensive duct run under the building) & Keynes local duct branch have live HTHW pipework.

3.1.7. Service ducting

- a) Basement ducts – Eliot College/Ingram/Jennison/Rutherford College/Stacey.

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b) Roof ducts – Rutherford College.

3.1.8. Ventilation ducting

a) All ducting where total access is possible, excluding fresh air intakes.

3.1.9. Sibson Building Ground Floor ventilation void.

3.2 Medway Campus

3.2.1 Undercroft located below The Old Church

No person under the direct control of the University, either staff directly employed or contractors, shall enter, or be instructed to enter, a confined space for any purpose;

- Until they have received a valid Permit-to-Work.
- Unless it is not reasonably practicable to undertake the necessary work without such entry.

APPENDIX 1: Permit to Work in Confined Spaces

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Permit to Work in confined Spaces
Estates Confined Space Access and Safe Working Procedure

Confined Space Access Permit

Date Time Permit Number

Description of Work

Exact Location of Proposed Work

Checklist YES NO N/A

Confirm that work in the confined space cannot be avoided?	<input type="checkbox"/>	<input type="checkbox"/>	
Is there a Risk Assessment / Method statement for this task?	<input type="checkbox"/>	<input type="checkbox"/>	
Is there a documented safe system of work and workers aware of the controls	<input type="checkbox"/>	<input type="checkbox"/>	
Workers appropriately qualified for type of confined space entry/rescue	<input type="checkbox"/>	<input type="checkbox"/>	
Are sufficient workers allocated to the job? <i>N.B. Lone-working not permitted. For a traverse, minimum of 2 persons to enter, plus top man.</i>	<input type="checkbox"/>	<input type="checkbox"/>	
Is all equipment identified in the RAMS available and within calibration date where applicable? i.e. Winch, Tripod, Gas monitor, etc?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rescue plan in place, equipment readily available and workers are trained?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If the rescue plan involves rescuers entering the space, are there at least two staff who are equipped with BA escape sets and trained to use them?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Means of communication readily available? <i>N.B. Check signal</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sludge/deposits removed, where applicable?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Space ventilated prior to entry?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Plant/valves etc. isolated and locked off as necessary?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gas and air test OK? Oxygen Level <input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All persons fit to enter?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are there any other safety measures or special instructions?	<input type="checkbox"/>	<input type="checkbox"/>	

If you, please provide details below.

I declare that it is safe to work in the confined space detailed above.

UoK Permit Authority Contact No

Signature Date

I confirm that all controls as above are in place and I have understood the requirements of this permit.

Competent Person Contact No

Signature Date

Work Completion

I have inspected the worksite. I am satisfied that the work is complete, all equipment returned and the site safe.

Uok Permit Authority

Signature Date

