Your Company Ltd

SAFE SYSTEM OF WORK

Confined Space Entry - Sewage Pumping Station

Reference	EX0013
Issue	1
Assessment Date	14/11/2026
Review Date	14/11/2027
Client	Your Client Ltd
Site Location	Sewage pumping station wet well
Assessor	Your Name, Health & Safety Manager

Executive Summary

This Safe System of Work (SSOW) details the procedural requirements, hazard controls, and rescue arrangements for entering a below-ground sewage pumping station wet well to execute a pump replacement. The operation is classified as a high-risk confined space entry, necessitating a robust permit-to-work system, continuous atmospheric monitoring, mechanical lifting and rescue equipment, and dedicated standby rescue personnel.

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1. Task Overview

Client	Your Client Ltd	**Site Location**	Sewage pumping station wet well
Description	Entry into a below-ground sewage pumping station wet well to mechanically disconnect, remove, and replace a submersible sewage pump. Includes electrical isolation, setup of lifting/rescue tripod, atmospheric testing, mechanical lifting operations, and strict decontamination protocols.		
Duration	1 working shift (approx. 8 hours)	**Personnel**	4
Permits	High Risk Confined Space Entry Permit, Electrical Isolation Certificate (LOTO), Lifting Plan (Routine Lift)		

2. Safe Work Procedures

Step 1. Site establishment, briefing, and securing the work area

Site Supervisor

Hazards	• Unauthorised public or vehicular access • Slips, trips, and falls on level • Miscommunication of duties
Controls	• Erect Chapter 8 barriers and warning signage ('Danger: Deep Excavation', 'Confined Space - No Unauthorised Entry') around the open well perimeter • Conduct a comprehensive site-specific toolbox talk detailing the rescue plan, communication signals, and emergency procedures • Ensure the Confined Space Entry Permit is signed and issued by the Authorising Engineer before proceeding • Establish an exclusion zone of at least 2 metres from the edge of the wet well

Step 2. Electrical and hydraulic isolation of the pumping station

Authorised Electrician / Lead Entrant

Hazards	• Electrocution or electric shock from live panels • Unexpected activation of pumps causing engulfment or physical trauma • Pressurised sewage release
Controls	• Qualified electrician to physically isolate the pump supplies at the main control panel using Lock-Out Tag-Out (LOTO) equipment • Prove dead using a proprietary voltage indicator compliant with GS38 • Isolate inlet valves physically, or if not possible, monitor levels upstream to ensure the well will not surcharge during work • Retain the LOTO keys on the person of the primary entrant (Key Safe system)

Step 3. Pre-entry atmospheric testing and forced ventilation

Top Person

Hazards	• Exposure to toxic gases (H2S, CO) • Asphyxiation from oxygen-deficient atmosphere • Explosive atmospheres (Methane/CH4)
Controls	• Perform a drop test using a calibrated 4-gas monitor prior to removing the well covers, sampling at top, middle, and bottom levels • If gases are detected or oxygen is outside the 19.5% - 23.5% range, introduce forced mechanical extraction/ventilation • Re-test atmosphere after 15 minutes of continuous ventilation before authorising any entry • Maintain forced ventilation throughout the duration of the task if deemed necessary by the risk assessment

Step 4. Setup of lifting and rescue equipment

Rescue Standby

Hazards	• Manual handling injuries • Equipment collapse leading to falls from height • Dropping objects into the wet well
Controls	• Erect a certified rescue tripod directly over the access point, ensuring all three legs are pinned, locked, and on firm, level ground • Attach the man-riding winch and a secondary fall arrest block; inspect both for current LOLER thorough examination tags • Tether all hand tools using lanyards to prevent dropping them onto personnel in the well • Perform a functional check of the winch mechanism prior to human attachment

Step 5. Access and entry into the wet well

Lead Entrant / Top Person

Hazards	• Falls from height during ladder descent • Sudden atmospheric changes • Exposure to raw sewage (biological hazard)
Controls	• Entrants must don full-body rescue harnesses (EN 361/EN 1497) and attach to the tripod winch/fall arrest system before breaching the edge • Entrants must carry personal 4-gas monitors in the breathing zone and a 10-minute Escape Breathing Apparatus (EEBA) • Descend the fixed access ladder slowly whilst the Top Person maintains continuous visual and vocal contact • Evacuate immediately if personal gas alarms sound; do not investigate the source

Step 6. Disconnection and removal of the defective pump

Lead Entrant

Hazards	• Crush or trap injuries from moving heavy plant • Biological infection from sewage (Leptospirosis, Hepatitis) • Slips on contaminated benching
Controls	• Attach the primary lifting chain to the pump lifting eye; ensure fingers are kept clear of pinch points • Coordinate the lift with the Top Person/Banksman using clear, agreed verbal commands • Use guide ropes where possible to prevent the pump swinging during extraction • Wear Category 3 chemical/biological coveralls, heavy-duty waterproof gloves (EN 388/EN 374), and safety wellingtons (EN ISO 20345 S5)

Step 7. Installation of the replacement pump

Top Person / Lead Entrant

Hazards	• Overhead suspended loads • Trapping of hands or limbs during alignment • Damage to electrical trailing cables
Controls	• Clear the drop zone at the bottom of the well before the Top Person begins lowering the new pump • Lower the pump slowly on the certified hoist; entrants must stand clear of the direct line of the suspended load • Physically align the pump on the guide rails using pry bars rather than hands to prevent crush injuries • Secure and tie off the new power cables to prevent entanglement in the impeller

Step 8. Egress and immediate decontamination

All Personnel

Hazards	• Cross-contamination of biological agents • Slips and falls during ascent • Fatigue
Controls	• Entrants ascend the ladder sequentially, remaining attached to the fall arrest/rescue winch until fully clear of the well edge • Proceed immediately to the designated hygiene station • Remove contaminated PPE sequentially: wash boots, remove coveralls, remove gloves last • Wash hands, forearms, and face thoroughly with soap and warm water before eating, drinking, or smoking

Step 9. Re-energisation, testing, and site demobilisation

Site Supervisor

Hazards	• Electrical faults on start-up • Open covers left unguarded
Controls	• Replace and securely lock all access covers to the wet well before removing isolation • Authorised electrician to remove LOTO locks and restore power to the control panel • Conduct a test run of the new pump, checking for correct phase rotation and flow • Sign off and formally close the Confined Space Entry Permit and handover the site

3. Competency & Training

1. City & Guilds 6160-03 (Working in High Risk Confined Spaces)

Description	Covers entry into high-risk confined spaces, use of full working breathing apparatus, and understanding of complex permit-to-work systems.		
Required For	Both Entrants	**Verification**	Verification of original C&G certificate or digital credential during site induction.

2. City & Guilds 6160-08 (Direct Emergency Rescue and Recovery of Casualties from Confined Spaces)

Description	Advanced training in the setup of rescue equipment, non-entry rescue, and entry rescue under full BA.		
Required For	Rescue Standby Personnel	**Verification**	Verification of certificate and matching ID prior to permit issuance.

3. ECS Gold Card (Installation Electrician)

Description	Proves competence in electrical installations and safe isolation procedures.		
Required For	Personnel performing electrical Lock-Out Tag-Out (LOTO)	**Verification**	Physical smart card check via ECS checking app on site.

4. Emergency First Aid at Work (EFAW) + Defibrillator (AED) Training

Description	Ensures capability to administer initial medical response, CPR, and trauma care post-rescue.		
Required For	Top Person and Rescue Standby	**Verification**	Check of valid 3-year certificate during induction.

4. Equipment & Inspection

1. Man-riding Tripod and Fall Arrest Winch

LOLER 1998, PUWER 1998 Regulation 6

Inspection Regime	Thorough examination every 6 months per LOLER 1998. Pre-use visual inspection and functional test per PUWER 1998 Regulation 6.
Pre-Use Checks	• Inspect tripod legs, locking pins, and feet for damage or deformation • Check the winch cable for kinks, fraying, or bird-caging • Verify the LOLER thorough examination certificate is in date (within 6 months) • Perform a mechanical function check of the winch braking mechanism

2. Multi-Gas Detector (4-Gas: H2S, CO, O2, LEL)

Confined Spaces Regulations 1997, PUWER 1998 Regulation 6

Inspection Regime	Annual factory calibration. Daily bump test prior to entry per manufacturer's instructions and Confined Spaces Regulations 1997.
Pre-Use Checks	• Check battery life is sufficient for the entire shift • Perform a bump test using calibration gas to verify sensor reaction and alarm triggers • Verify zero-calibration in clean, fresh air • Ensure filters are clean and water traps are clear

3. 10-Minute Escape Breathing Apparatus (EEBA)

Confined Spaces Regulations 1997, PPE Regulations 1992

Inspection Regime	Annual inspection by competent service agent. Daily visual pre-use checks.
Pre-Use Checks	• Check the cylinder pressure gauge reads full (in the green zone) • Inspect the carrying bag and anti-tamper tags • Check the pneumatic hoses for signs of cracking or perishing • Ensure the face hood/mask is visibly clean and undamaged through the viewing window

5. PPE Requirements


Head protection


Respiratory protection


Protective clothing


Gloves


Safety harness


Safety footwear

- Safety helmet with four-point chinstrap (EN 397)
- Full body rescue harness with dorsal and sternal attachment points (EN 361 / EN 1497)
- Chemical/biological resistant coveralls (Type 4/5/6)
- Safety wellingtons/boots with steel toe and midsole (EN ISO 20345 S5)
- Heavy-duty nitrile/PVC gloves providing biological and mechanical protection (EN 374 / EN 388)
- Personal continuous 4-gas monitor
- 10-Minute Escape Breathing Apparatus hood (EN 1146)

6. Site Rules

1. Sign in at the site office and complete a site-specific induction before starting work.
2. A valid Confined Space Entry Permit and LOTO Certificate must be signed and displayed at the point of work.
3. The Top Person must remain stationed at the access point at all times while personnel are inside the wet well.
4. Strict hygiene protocols: wash hands and forearms thoroughly before eating, drinking, smoking, or touching the face.
5. No entry without personal multi-gas monitors switched on and actively sampling.
6. Mobile phones must not be used while acting as Top Person or Banksman.
7. Report any cuts, grazes, or feeling unwell immediately to the Site Supervisor.

7. Emergency Procedures

First Aid
Appointed first aiders are the Top Person and Rescue Standby. A fully stocked trauma first aid kit and AED must be positioned adjacent to the tripod setup.

Fire Emergency
CO2 and Foam fire extinguishers to be stationed at the entry point. In the event of a fire, evacuate the well immediately using the winch system and proceed to the site assembly point.

Rescue Procedures
NON-ENTRY RESCUE PREFERRED: If an entrant collapses, the Rescue Standby will extract them using the man-riding winch. ENTRY RESCUE: Only permitted if non-entry fails; Rescue Standby must don full working SCBA, clip onto a secondary winch, and enter under a separate rescue permit. The Top Person remains outside to operate the winch and liaise with emergency services.

Evacuation
If atmospheric alarms sound, entrants must immediately don EEBA hoods and evacuate the well via the ladder. Top Person to assist ascent using the winch.

Spillage Response
Spill kit available for hydraulic/oil leaks from the pump. Contain using booms/pads and prevent discharge into surrounding watercourses.

Emergency Contacts
Site Manager: [number]. Emergency Services: 999. Request 'Fire and Rescue - Confined Space Rescue Unit'. HSE Incident Contact Centre (fatal/major injuries): 0345 300 9923.

8. Monitoring & Review

Supervision	Continuous visual and verbal supervision of entrants by the dedicated Top Person. Oversight by Site Supervisor.
Review Schedule	This SSOW must be reviewed by all operatives during the pre-job toolbox talk, and formally reviewed annually or post-incident.
Responsible Person	Site Manager
Review Triggers	Any activation of gas monitors during the works; Failure of the lifting or rescue equipment; Changes to the physical condition of the pumping station (e.g., sudden flooding); Near-miss or accident occurring on site; Introduction of new operatives requiring induction

9. ALARP Justification

As Low As Reasonably Practicable (ALARP) Declaration

The residual risks in this safe system of work have been reduced to ALARP. Total elimination of entry is not practicable due to the below-ground configuration of the pump guide rails. The risks of atmospheric hazards, biological exposure, and falls have been mitigated through strict engineering controls (LOTO, forced ventilation), administrative controls (PTW, specialized C&G training, continuous gas monitoring), and robust rescue arrangements (man-riding tripod, non-entry rescue capability, EEBA). Further risk reduction would require full reconstruction of the pumping station infrastructure, which is grossly disproportionate to the safety benefit gained for a routine maintenance task.

10. Regulatory Compliance

Regulation / Standard	Section	Relevance to This Assessment
Health and Safety at Work etc Act 1974	Section 2(2)(a) — Safe systems of work	Legal duty to provide and maintain safe systems of work, fulfilled by the generation and adherence to this document.

Regulation / Standard	Section	Relevance to This Assessment
Confined Spaces Regulations 1997	Regulations 4 & 5	Mandates preventing entry if reasonably practicable, and implementing safe systems of work and emergency rescue arrangements if entry is unavoidable.
Lifting Operations and Lifting Equipment Regulations 1998 (LOLER)	Regulation 9 — Thorough Examination	Requires the rescue tripod, winch, and pump lifting hoist to be thoroughly examined by a competent person every 6 months for lifting personnel.
Electricity at Work Regulations 1989	Regulation 12 — Means for cutting off the supply and for isolation	Provides the legal basis for the LOTO procedure to ensure the pump cannot be inadvertently re-energised during replacement.
Control of Substances Hazardous to Health Regulations 2002 (COSHH)	Regulation 7 — Prevention or control of exposure	Addresses the biological hazards of raw sewage (Leptospira, Hepatitis) requiring Type 4/5/6 PPE and strict hygiene protocols.

11. Incident & Near-Miss Reporting

Minor Injury
Administer first aid. Record the injury in the site Accident Book (BI 510). Notify the Site Supervisor immediately. Complete an internal incident report form within 24 hours.

Serious Incident
STOP WORK IMMEDIATELY. Initiate the rescue plan. Call 999 and request Fire and Rescue and Ambulance. Preserve the scene for investigation. Notify the Site Manager and Health & Safety Lead immediately.

Near-Miss Reporting
Report all near-misses (e.g., dropped objects, gas monitor alarms without injury) to the supervisor immediately. Investigate root causes within 48 hours and update this SSOW if required.

RIDDOR Reporting
Report to the HSE under RIDDOR 2013 for fatalities, specified injuries (e.g., fractures, amputations), over-7-day incapacitation, or dangerous occurrences (e.g., failure of breathing apparatus/lifting equipment). Report at www.hse.gov.uk/riddor or by calling 0345 300 9923.

Emergency Contacts
Site Supervisor: [Number], H&S Lead: [Number], Emergency Services: 999, HSE Incident Contact Centre: 0345 300 9923

12. Applicable Legislation

- Health and Safety at Work etc Act 1974
- Management of Health and Safety at Work Regulations 1999
- Confined Spaces Regulations 1997
- Lifting Operations and Lifting Equipment Regulations 1998 (LOLER)
- Provision and Use of Work Equipment Regulations 1998 (PUWER)
- Work at Height Regulations 2005
- Control of Substances Hazardous to Health Regulations 2002 (COSHH)
- Electricity at Work Regulations 1989
- Personal Protective Equipment at Work Regulations 1992 (as amended 2022)

13. Staff Acknowledgement

I confirm that I have read and understood the above Safe System of Work and will comply with the procedures set out.

Name	Position	Date	Signature

No staff acknowledgments recorded yet.

Assessor Declaration & Client Acceptance

I confirm that this assessment has been prepared by a competent person and represents a suitable and sufficient assessment of the risks associated with the described work activity, in accordance with the Management of Health and Safety at Work Regulations 1999.

Prepared By (Assessor)

Your Name, Health & Safety Manager
Name & Position

Signature

Date

Accepted By (Client / Principal Contractor)

Name & Position

Signature

Date