

# RISK ASSESSMENT

## Sanitary, Plumbing & Water Supply

International Edition — Water Supply & Cold Water Distribution | Hot Water Services | Legionella Control | Sanitary Drainage | Stormwater & SuDS | Pipework Fabrication | Pressure Testing | Commissioning | Excavation & Buried Services | Maintenance & Repair

INTERNATIONAL GLOBAL VERSION | Rev. 01 | March 2026

Document Information	
Document Reference	HSE-RA-PLB-INT-001
Revision / Date	Rev. 01   March 2026
Classification	CONTROLLED DOCUMENT — HSE Department
Scope	Sanitary, plumbing, and water supply operations — water supply and cold water distribution, hot water services and thermal controls, Legionella risk assessment and water quality, sanitary drainage and soil/waste systems, stormwater and SuDS, pipework fabrication and jointing, pressure testing and commissioning, excavation and buried services, maintenance and repair. Applicable to residential, commercial, industrial, and healthcare plumbing installations.
Applicable Standards	BS EN 806 (1-5)   BS 6700   BS EN 1717   Water Fittings Regs 1999   Water Industry Act 1991   HSG274 (Parts 1-3)   L8 ACoP   BS 8558   BS EN 12056   BS EN 752   BS EN 1610   WRAS Approval   ISO 45001:2018   ISO 14001:2015   ISO 31000:2018   ISO 12100:2010   CDM Regs 2015   COSHH Regs 2002   PUWER 1998   LOLER 1998   Work at Height Regs 2005   Confined Space Regs 1997   Manual Handling Ops Regs 1992   Gas Safety Regs 1998   Electricity at Work Regs 1989   CAR 2012   RIDDOR 2013
Total Hazards Assessed	30 hazards across 10 work areas
Risk Methodology	5x5 Likelihood x Severity matrix (ISO 31000:2018)
Next Review Date	March 2027 or following any incident, Legionella event, process change, new chemical, or regulatory update

### Applicable International Standards & Regulatory Framework

Standard / Regulation	Scope and Application
BS EN 806 Parts 1-5	Design, installation, inspection, testing and operation of water supply systems conveying water for human consumption inside buildings.
BS 6700:2006+A1:2009	Design, installation, testing and maintenance of domestic water services — cold water storage, hot water, pressure management, and backflow prevention.
BS EN 1717:2000	Protection against pollution of potable water — backflow prevention requirements for all water supply connections; fluid category classification.
Water Supply (Water Fittings) Regs 1999	Statutory requirements for design, installation, and maintenance of water fittings to prevent contamination, waste, and misuse; notifiable work requirements.
L8 ACoP & HSG274 Parts 1-3	Legionnaires Disease control: risk assessment, monitoring, cleaning/disinfection of hot and cold water systems, cooling towers, and spa pools.
BS 8558:2015	Guide to design, installation, testing and maintenance of water services for domestic use within buildings — supplements BS EN 806.
BS EN 12056	Gravity drainage systems inside buildings — design, installation, inspection and testing of sanitary drainage.
BS EN 752	Drain and sewer systems outside buildings — management, design, construction, and maintenance of gravity drains and sewers.
BS EN 1610	Construction and testing of drains and sewers — bedding, backfill, and pressure/infiltration testing of below-ground drainage.

<b>ISO 45001:2018</b>	Occupational Health and Safety Management System — risk assessment, controls, and emergency preparedness framework.
<b>CDM Regulations 2015</b>	Construction (Design and Management) — Principal Contractor and Principal Designer duties for health and safety in all plumbing and drainage construction projects.
<b>COSHH Regs 2002</b>	Control of Substances Hazardous to Health — flux, solder, solvent cement, chlorine biocides, descaling acids, and Legionella biocide programmes.
<b>ISO 31000:2018</b>	Risk Management — 5x5 likelihood x severity matrix principles.
<b>Gas Safety (Inst and Use) Regs 1998</b>	Gas Safe Register requirements for all gas-assisted hot water system installation, alteration, and servicing.
<b>Work at Height Regs 2005</b>	Risk assessment and control for all elevated work — ladders, MEWP, scaffolding, and rooftop drainage/gutter work.
<b>Confined Space Regs 1997</b>	Confined space entry — manholes, inspection chambers, underground tanks, large cisterns, and drainage pump chambers.
<b>CAR 2012</b>	Control of Asbestos Regulations 2012 — awareness, survey, and safe working requirements for legacy pipe lagging in pre-2000 buildings.
<b>Pressure Systems Safety Regs 2000</b>	Written Scheme of Examination for unvented hot water cylinders and pressurised vessels above 10 litre capacity.
<b>WRAS Approval Scheme</b>	Water Regulations Advisory Scheme — product approval for water fittings and materials to prevent potable water contamination.
<b>RIDDOR 2013</b>	Statutory reporting of injuries, dangerous occurrences, and occupational diseases including Legionellosis (Legionnaires Disease).

## Risk Rating Matrix

Score	Risk Level	Colour	Action Required	Authority
1-4	<b>LOW</b>		Routine monitoring	Supervisor
5-9	<b>MEDIUM</b>		Action within 30 days	Dept Manager
10-16	<b>HIGH</b>		Immediate — remediate within 7 days; Senior Management sign-off required	HSE Manager + Head
17-25	<b>CRITICAL</b>		Stop work — immediate Board-level escalation	Board / MD

**Likelihood Scale: 1=Rare | 2=Unlikely | 3=Possible | 4=Likely | 5=Almost Certain**

**Severity Scale: 1=Negligible | 2=Minor | 3=Moderate | 4=Major | 5=Catastrophic**

**Risk Rating = Likelihood x Severity**

## Risk Register — Sanitary, Plumbing & Water Supply

HAZARD IDENTIFICATION & INITIAL RISK										RESIDUAL RISK (POST-CONTROLS)				MONITORING & REVIEW					
No.	Work Area	Activity / Task	Hazard Description	Persons at Risk	Hazard Type	L	S	R	Risk Level	Control Measures	L	S	R	Risk Level	Monitoring Required	Responsible	Frequency	Regulatory Ref.	
<b>Work Area 1 — Water Supply, Cold Water Distribution &amp; Storage</b>																			
1	Water Supply	Service connection to public water main	Unintended water main strike causing high-pressure water ejection and injury; ground contamination; service disruption to public supply; prosecution under Water Industry Act for unlicensed connection	Plumbers, Water Undertaker operatives, public	Mechanical / Legal	3	4	12	HIGH	Cat and Genny survey before any ground break; LSBUD utility plans obtained and marked up; 500 mm hand-dig exclusion zone around marked water main; Water Undertaker approval before connection; WRAS-approved materials only; notifiable work notification per Water Fittings Regs 1999; competent Water Regulations qualified person carries out connection; pressure test and chlorination before commissioning	2	2	4	LOW	Pre-work Cat and Genny record; notifiable work submission	Qualified Plumber / Water Undertaker Rep	Pre-work	Water Industry Act 1991; Water Fittings Regs 1999; WRAS; CDM 2015	
2	Water Supply	Cold water storage cistern (CWSC) installation and maintenance	Legionella growth in stagnant or warm cold water; cistern contamination from vermin, bird ingress, or poor lid seal; cold water temperature above 20 deg C creating Legionella risk; overflow creating dampness and structural damage	Building occupants, plumbers, maintenance operatives	Health / Biological / Legionella	4	4	16	HIGH	Cistern sited in dark, insulated, vermin-proof enclosure; close-fitting insulated secured lid; float valve maintaining 25 mm air gap; inlet and overflow screened; cold water temperature confirmed below 20 deg C at all outlet points; disinfection per L8/HSG274 before first use; chlorination log signed and dated; stagnation management: any cistern unused for 3+ days to be disinfected before use; annual inspection and clean by water hygiene contractor; temperature monitoring monthly	2	2	4	LOW	Monthly temperature log; annual cistern inspection record; disinfection certificate	Responsible Person / Water Hygiene Contractor	Monthly / Annual	L8 ACoP; HSG274 Part 2; BS EN 806-2; Water Fittings Regs 1999; RIDDOR	
3	Water Supply	Backflow prevention device failure or missing device	Backflow of contaminated water into potable supply (cross-connection contamination)	Building occupants, water supply network users	Health / Legal	3	5	15	HIGH	BS EN 1717 compliance: correct backflow prevention device installed per fluid category risk assessment	2	2	4	LOW	Annual RPZ/DCV test certificate; installation	WRAS-Trained Plumber / Responsible Person	Annual / On installation	BS EN 1717; Water Fittings Regs 1999; WRAS; BS EN 806	







10	Drainage	Connection to and breaking into live drainage stack	Exposure to noxious sewer gases (hydrogen sulphide H2S, methane, ammonia) from live drainage system; infectious contamination from sewage; foul water ejection under sewer pressure; entrapment if working in drainage chamber	Plumbers, drainage engineers, site workers	Chemical / Biological / Toxic	3	4	12	<b>HIGH</b>	4-gas monitoring (O2, LEL, CO, H2S) before and during any work near open drainage; cap all open pipe ends immediately after cutting; work in confined drainage chambers requires confined space permit; PPE: P2 mask, nitrile gloves, safety goggles, waterproof overalls; drainage system map consulted before cutting into stack; vacuum drainage jetting operatives to wear full face shield; waste water classified as Category 3 — proper PPE and hygiene; hepatitis B vaccination offered to drainage operatives; hand wash facilities available	2	2	4	<b>LOW</b>	4-gas monitoring record; confined space permit log; health surveillance records	Site Supervisor / Confined Space Team Leader	Pre-task / Per entry	Confined Space Regs 1997; COSHH Regs 2002; CDM 2015; Water Industry Act 1991
11	Drainage	Solvent cement jointing (uPVC and CPVC pipe systems)	Inhalation of solvent vapour (methyl ethyl ketone MEK, cyclohexanone) causing CNS effects, drowsiness, and long-term liver/kidney damage; skin sensitisation from primer; flammable vapour accumulation risk in confined spaces	Plumbers, apprentices	Chemical / Fire	3	3	9	<b>MEDIUM</b>	LEV or natural ventilation minimum ACH 10 for all solvent cement work; organic vapour cartridge respirator if ventilation inadequate or in confined spaces; EN 374 nitrile gloves and safety glasses; ATEX classification in poorly ventilated spaces; no smoking or ignition sources during solvent cement application; solvent cement stored in original labelled containers; waste containers sealed and disposed as chemical waste; COSHH assessment per solvent cement product	2	2	4	<b>LOW</b>	COSHH assessment review; quarterly atmospheric monitoring in enclosed areas	Chemical Safety Officer / Site Supervisor	Quarterly / On chemical change	COSHH Regs 2002; ATEX DIR 99/92/EC; EN 374; REACH
12	Drainage	Manual handling of heavy sanitary ware, cisterns, and drainage access covers	Musculoskeletal injury from lifting heavy cast iron or vitreous china sanitary ware; crush injury from dropping access covers (recessed covers up to 70 kg); acute back injury from awkward postures in restricted	Plumbers, drainage engineers, labourers	MSD / Manual Handling	4	3	12	<b>HIGH</b>	Manual handling risk assessment per Manual Handling Ops Regs 1992; mechanical aids (sack trucks, dolly trolleys, pipe rollers) for all items above 20 kg; team lift procedures for items 20-40 kg; crane or hoist for items above 40 kg; drainage access	2	2	4	<b>LOW</b>	Annual manual handling risk assessment; MSD symptom survey	HSE Manager / Occ. Health	Annual	Manual Handling Ops Regs 1992; ISO 11228; MSD DIR 90/270/EEC





17	Pipework	Press-fitting and push-fit joint failure during or after pressurisation	Incomplete press-fit joint ejecting under pressure causing high-pressure water jet injury; push-fit fitting pulled out if pipe not fully inserted to insertion depth mark; joint failure on plastic pipe causing flooding and structural water damage	Plumbers, building occupants	Mechanical / Pressure / Flooding	3	4	12	<b>HIGH</b>	Calibrated pressing tool with correct jaw for manufacturer and pipe diameter; press-fit visually inspected for full ring engagement before pressing; incomplete pressings re-made before pressure test; push-fit: pipe cut square, deburred, insertion depth marked and verified after assembly; pressure test per BS EN 806-4 before concealment or commissioning; personnel clear of fitting line during pressurisation; no access to concealed press-fit/push-fit joints without inspection hatches; test certificate signed before concealment	2	2	4	<b>LOW</b>	Pressure test certificate before concealment; installation inspection record	Qualified Plumber / Site Supervisor	Per installation section	BS EN 806-4; BS 6700; Water Fittings Regs 1999; PUWER 1998
18	Pipework	Asbestos in legacy pipe lagging and insulation	Inhalation of asbestos fibres from disturbed pipe lagging insulation in pre-2000 buildings causing mesothelioma (asbestosis, lung cancer) — latency period 20-40 years; no safe threshold for asbestos exposure; RIDDOR-reportable occupational disease	Plumbers, maintenance operatives, building occupants in vicinity	Health — Carcinogen	4	5	20	<b>HIGH</b>	Asbestos register checked before any work disturbing pipe insulation in pre-2000 buildings; if register unavailable treat as suspect and commission UKAS-accredited asbestos survey before work; Category A asbestos awareness training for all plumbers working in pre-2000 buildings; if ACM identified: stop work, inform site manager, licensed asbestos removal contractor for notifiable work; respirator: minimum FFP3 (P3) for non-licensable work; all asbestos-containing material to be removed by licensed contractor before plumbing work commences; biological monitoring (lung function check) offered to workers with historical asbestos exposure	2	2	4	<b>LOW</b>	Asbestos register check record; UKAS survey report if register unavailable; licensed contractor removal certificate	HSE Manager / Licensed Asbestos Contractor	Pre-work / as required	CAR 2012; Control of Asbestos Regs 2012; IRR 2017; RIDDOR; HSG264

**Work Area 7 — Pressure Testing & Commissioning**

19	Pressure Testing	Pressure testing of water supply and drainage systems	Explosive decompression or fitting ejection during pressure test if test pressure exceeds system rating; injury from high-pressure water jet from failed joint; drowning or hypothermia risk if pressure test vessel ruptures in confined space	Plumbers, site operatives, engineers	Mechanical / Pressure	3	4	12	HIGH	Test pressure set to 1.5 x maximum working pressure per BS EN 806-4; pressure build-up gradual and incremental — never shock-pressurise; calibrated gauge (0.1 bar resolution, calibration certificate current within 12 months) used; exclusion zone around test section during pressurisation — no persons in line of fittings; water medium preferred over air for water supply tests; if air test required: maximum 1.5 bar gauge; pressure relief valve set on test rig; written test record completed and signed; test result to remain on file for minimum 10 years	2	2	4	LOW	Pressure test certificate signed and retained; gauge calibration certificate	Qualified Plumber / Site Supervisor	Per system section	BS EN 806-4; BS 6700; BS EN 1610; Water Fittings Regs 1999; PUWER 1998
20	Pressure Testing	Water disinfection and chlorination (commissioning)	Ingestion of residual chlorine at elevated concentration (above 0.5 mg/l) if system not fully flushed after disinfection; skin and eye contact with concentrated chlorine solution during mixing; inadequate disinfection leaving bacteriological contamination causing illness	Plumbers, commissioning engineers, building occupants	Chemical / Health	3	4	12	HIGH	Chlorination per Water Regulations/BS EN 806-4: minimum 50 mg/l free chlorine for 1-hour contact; full flush to zero chlorine residual before sampling; water sample (TVC, E. coli, coliforms, total coliforms) taken by accredited laboratory before commissioning; positive bacteriological sample requires repeat disinfection; EN 374 gloves and goggles for chlorine solution handling; COSHH assessment for disinfectant used; DO NOT USE signs on all outlets until clear laboratory results confirmed; disinfection log signed and retained on file minimum 10 years	2	2	4	LOW	Chlorination log; laboratory water quality certificate; commissioning certificate	Qualified Plumber / Water Hygiene Contractor	Per new or modified installation	BS EN 806-4; Water Fittings Regs 1999; COSHH Regs 2002; Drinking Water Regs 2016
21	Pressure Testing	Commissioning of unvented hot water systems (Gas Safe and G3)	Fatal scalding from PRV failure if discharge pipe incorrectly installed or blocked; non-compliance with Building Regulations G3 causing	Building occupants, plumbers, maintenance operatives	Thermal / Pressure / Legal	3	5	15	HIGH	Building Regulations G3 notification submitted to Building Control before commissioning; Registered Competent Person (Unvented Hot Water) carries out commissioning; all safety	2	2	4	LOW	G3 commissioning certificate; Building Regs notification; Gas Safe certificate	Registered Competent Person (Unvented) / Gas Safe Engineer	Per installation	Building Regs Part G3; Pressure Systems Safety Regs 2000; Gas Safety Regs 1998; Water Fittings Regs 1999











## Risk Summary Statistics

Initial Risk Profile — 30 Hazards	Residual Risk Profile (Post-Controls)	Key Regulatory Frameworks	Review Triggers
<b>CRITICAL: 0 hazards (0%)</b> <b>HIGH: 15 hazards (50%)</b> <b>MEDIUM: 12 hazards (40%)</b> <b>LOW: 3 hazards (10%)</b>	<b>CRITICAL: 0 hazards (0%)</b> <b>HIGH: 0 hazards (0%)</b> <b>MEDIUM: 0 hazards (0%)</b> <b>LOW: 30 hazards (100%)</b>	BS EN 806 (Parts 1-5) L8 ACoP and HSG274 (Parts 1-3) Water Fittings Regs 1999 Water Industry Act 1991 COSHH Regs 2002 CDM Regulations 2015 Confined Space Regs 1997 Work at Height Regs 2005 Gas Safety Regs 1998 CAR 2012 (Asbestos) ISO 45001:2018 RIDDOR 2013 (Legionellosis)	Any workplace incident or near-miss Legionella detection above 100 cfu/L Confirmed Legionnaires Disease case New chemical or process introduction Equipment change or modification Regulatory or standards revision (L8, BS EN 806) Water Undertaker enforcement notice Water quality test failure (bacteriological) Annual management review (mandatory) Change in Responsible Person (Legionella) Post-external audit finding

## Review and Revision Log

Rev.	Date	Description of Change	Prepared By	Reviewed By	Approved By
01	March 2026	Initial issue — Sanitary, Plumbing and Water Supply Risk Assessment; 30 hazards across 10 work areas; BS EN 806 / L8 / Water Fittings Regs / ISO 45001 / CDM 2015 / Gas Safety Regs international alignment	HSE Manager	Contracts Manager / RP (Legionella)	QHSE Director

*Document Classification: CONTROLLED — HSE Department | This document must be reviewed and updated following any workplace incident, Legionella event, Water Regulations amendment, new chemical or process introduction, or equipment modification. All personnel must be briefed on applicable sections before commencing work.*