

**ESSENTIAL
STANDARD
no.26**

Working on Live Mains



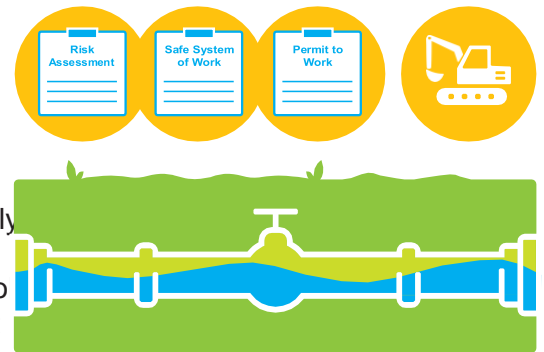
KEY MESSAGES

- It's paramount to ensure personnel working on or close to live pressurised or full mains and apparatus are safe during any planned or reactive activity, regardless of material type.
- Wherever possible, perform pre-works planning, including isolation, to choose the best method and procedure to ensure safe working.
- Don't work on or near live GRP mains.
- Don't work on UPVC mains if any of the following apply, over 12" (300mm), over 0.5bar (5mh) or at a depth greater than 1m, or if the risk assessment identifies concerns
- Identify competent personnel (training, certification and experience) to perform activities associated with repairing burst/leaking apparatus.
- Engage in pre-works consultation/risk assessment to identify possible dangers and introduce control measures.

1. Introduction

Read this standard in conjunction with **Essential Standard 01 – Excavations.**

Any excavation over, adjacent or working upon live mains and/or apparatus must be considered as a high-risk activity because any failure or bursting of the pipework/apparatus could injure those directly involved or in the immediate vicinity of the work. These activities require a risk assessment and the introduction of appropriate control measures. Whenever practicable, isolate live mains and equipment to avoid risk. An appropriate assessment, safe system of work, permits and controls must be undertaken, recorded and in place.



To achieve safe systems and controls and correctly manage and assess works of this nature, do the following:

HIERARCHY OF RISK CONTROL FOR AVOIDING DANGER FROM UNDERGROUND SERVICES

Eliminate	Isolate existing services during the planned activities - divert where possible to avoid working on or around live mains.
Reduce	Reduce flow/pressure.
Inform	<ul style="list-style-type: none"> • Check isolation according to permit. • Ensure there is a S.S.W, permit to break ground and trial holes. • Identify critical assets, including the age and type of the main and the proximity of high-risk third party assets i.e. tube stations etc. • Make sure the responsible person supervising the work has all the permit controls and understands them. • Ensure everyone involved is briefed, fully understands the scope of works and hazards associated with the activity, is familiar with safe digging practices and emergency procedures.
Control	<ul style="list-style-type: none"> • Ensure RAMS/POWA reflect controls from permits, etc. • Ensure there are barriers to prevent unauthorised access to the area (consider 3rd parties etc.) • Consider what safeguards should be in place to protect individuals if the asset fails i.e. blankets, etc.
PPE	Wear all appropriate PPE for your task in accordance with ES 24 PPE mandatory requirements.
Discipline	<ul style="list-style-type: none"> • Don't deviate from the planned method of work; if there is a variation, follow the management of change process. • Ensure that there is a robust close out and review of each task to learn from.



IF ALL SAFE SYSTEMS AND CONTROLS ARE **NOT** IN PLACE OR IT IS NOT SAFE TO PROCEED - **STOP!**









2. Pre-Planning the Activity

All work and activities must be planned. Pre-planning will give you the best opportunity to understand the nature of works and what preventative measures to implement.

Before work commences, do the following:	
<ul style="list-style-type: none"> Complete an assessment of the work using the risk assessment matrix (see page 4). 	<ul style="list-style-type: none"> Perform a visible risk assessment of the works area.
<ul style="list-style-type: none"> Obtain all required and relevant information in relation to the works. 	<ul style="list-style-type: none"> Identify the correct personnel for the task in hand.
<ul style="list-style-type: none"> Have a permit to work in place for all works on our network assets. 	<ul style="list-style-type: none"> Identify and convey hold points to site teams to allow works to be suspended if necessary.
<ul style="list-style-type: none"> Obtain information in relation to the works / site area. 	<ul style="list-style-type: none"> Have a continuous monitoring and review process in place during the works operation.

No job activity is 100% the same, so it's essential to instigate and implement additional control measures to reinforce task-specific activities in relation to working on or close to any live or pressurised apparatus.

These measures include, but are not limited to:

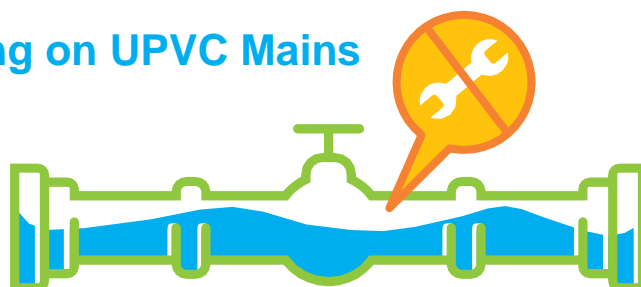
	A description of works to be done, including sketches and drawings		Permits to work and authorisation
	Job associated risks already known		Contingency in the event of any change in methodology
	Control measures already in place		Identification of responsible person(s) for monitoring Safe System of Work (SSOW) and controlling change if required
	Job-specific requirements (i.e. personnel, plant, equipment, materials, PPE, etc.)		Explain the requirements for change so that all those affected by works know what the required change process is

Daily briefings should follow the above-mentioned information so that SSOW are understood but more importantly implemented. **NOTE - Lead Run Joints – repairing or knocking-in lead is prohibited: clamps or collars must be used. Steel Mains – welding shall NOT be undertaken.**

3. No Work on GRP Mains and Working on UPVC Mains

There will be no working on or near live GRP mains:

- Confirm isolation and depressurisation before starting any work.
- If, at any point, a GRP main is identified, STOP work immediately.



This Essential Standard reflects extensive work undertaken to understand and manage the risk of working on or near live UPVC mains.

It has been assessed that excavations over throttled PVC mains, equal to or under 12", (300mm), to a maximum of 0.5 bar (5mh) at the nearest pressure monitoring point, (hydrant or washout), to the excavation to a depth and width of 1 metre x 1 metre or greater, is now permissible, (with reference to [Essential Standard 1 Excavations](#)). This update **does not** mean Step 1 of the hierarchy of control, 'eliminate', is skipped but should be risk assessed appropriately to the situation and consider all contributory factors. Work on or near UPVC mains outside of the criteria detailed here, must continue to be fully isolated the same as GRP. This way of working is consistent for Clean Water & Waste Water operations.

4. Thames Water Permit to Work

Thames Water operates a Permit to Work system for all operations on or near mains, including leakage and mains repair.

The permit records the controls and mitigations that must be in place, as well as the sequence of operations to be undertaken. This is controlled by the Thames Water Network Management Centre who will assist in the planning and risk assessment of the activity, including such necessary operations as mains isolation, diversions, recharge, testing and flushing programs.



It is essential that any work on such mains is only done under the permit scheme, with no deviation from the method statement or permit to work.

5. Risk Assessment

Perform an assessment of the Safety, Health and Welfare (SH&W) risks for all works done on or near TW assets, as well as take into consideration the impact of customer and supply interruptions.

A risk assessment matrix will help in the decision making at every stage of the operation. This will ensure that the necessary controls and sign offs are in place before commencing work and allowing the plan to be executed safely on site. This should be completed by those undertaking the activity and submitted as part of the RAMS and Permit to Work process. A copy of the Risk Assessment Matrix is available on the Health & Safety Hub:

0 – 5 Low risk		SEVERITY OF THE POTENTIAL INJURY / DAMAGE				
		Insignificant damage to property, equipment or minor injury	Non-reportable injury, minor loss of process or slight damage to property	Reportable injury, minor loss of process or limited damage to property	Major injury, single fatality critical loss of process/ damage to property	Multiple fatality catastrophic loss of business
6 – 10 Moderate risk						
11 – 15 High risk						
16 – 25 Extremely high unacceptable risk						
Likelihood of the hazard happening		1	2	3	4	5
	Almost certain 5	5	10	15	10	25
	Will probably occur 4	4	8	12	16	20
	Possible occur 3	3	6	9	12	15
	Remote possibility 2	2	4	6	8	10
	Extremely unlikely 1	1	2	3	4	5

6. Executing the plan



Once all the planning and assessment has been done, then it is important that those performing the activity stick to the plan and know what to do if the situation on the ground changes.

Before starting the activity, the supervisor or ganger leading the activity should make an assessment and verify the following:



- **Drawings**

- colour drawings are available, services are located, identified and marked up using the cable avoidance tool and Genny.



- **Risk Assessments**

- all personnel involved have been briefed on and recorded their understanding of the plan (including emergency arrangements), method statements and point of work/risk assessment required.



- **Isolate**

- isolate and eliminate the risk and hazard where possible, i.e. depressurise etc.



- **Permit**

- permit to work has been issued that lists the controls/risks of working around a live main and that the permit to dig/break ground has been completed (refer to Essential Standard 01 – Excavations for full information on permitting requirements).



- Temporary works – sufficient temporary works in place during, and until the final repair/replacement solution is implemented.



- Management of change – all personnel involved know what to do if things change during the work. If anything changes from the agreed plan – STOP and reassess.

REMEMBER - DRIP

7. Closing out and reviewing the activity

Once the activity has been completed, the person responsible (foreman/ganger) must review the plan to ensure that all work has been completed accordingly and if it wasn't, document why and what can be learned from it. Update and file all drawings in accordance with the work plan.

