

Irish Water Self Lay Quality Assurance

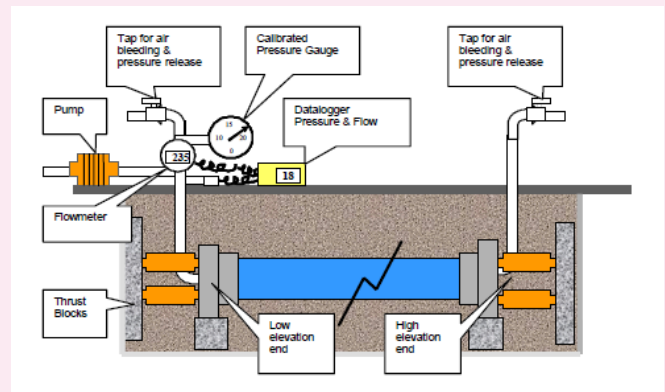
Toolbox Talk 5 of 8: Pressure Main Testing (PE)

Step 1 – Before You Start

- Ensure safety is considered during the planning and execution of the works. If working on behalf of Irish Water, adhere to Irish Water's HSQE requirements.
- The procedure for testing of Polyethylene (PE) pressure pipes is the Type II Test as set out in WIS-4-01-03. This Toolbox Talk provides a summary of the procedure, refer to the Irish Water's Codes of Practice and WIS-4-01-03 for the full testing procedure details.
- For water main testing, all operatives should complete Water Hygiene Training and adhere to the requirements.
- All equipment should be in good working order and, where applicable, should have a relevant calibration certificate and CE marking.
- Pressurized pipelines represent a hazard, and all relevant health and safety regulations should be taken into account. Risk Assessment/Method Statement (RAMS) must be provided to Irish Water prior to commencement of testing.
- Before installation of any water or wastewater infrastructure works refer to Irish Water's Codes of Practice and Standard Details which are available, along with the full library of Quality Assurance Toolbox Talks, on the Irish Water website water.ie/connections/

Step 3 – Main Pipeline Test Set-up

- Calculate 4% air content before test set up.
- Isolate the pipeline under test from the rest of the network.
- Testing against closed valves is not permitted.
- Thrust blocks should be sufficient to withstand the force of the test.
- Service connections should not be tapped prior to testing the main pipeline.
- The section of the pipeline under test should be sufficiently covered to prevent the pipe from lifting during testing.
- Leave the joints visible during the test so that leaks can be seen and remedied.



Step 2 – Selecting the System Test Pressure

- The System Test Pressure (STP) shall be 1.5 times Maximum Design Pressure (MDP) at the lowest point of the pipe.
- MDP is a pressure equivalent to the sum of the maximum continuous operating pressure plus an allowance for surge pressure.
- The allowance for surge pressure, where not known, shall be a minimum of 2 bar.
- In all instances, the STP shall not be less than 10 bar.

Step 3 – Required Test Equipment

- Tapped blank end plates which have a pressure rating of at least 1.5*STP.
- A pump to raise the pressure to STP.
- Flow Meter.
- Pressure Gauges (digital and mechanical).
- Data Logger System.
- Duckfoot hydrants may be used to allow easier removal of swabs.



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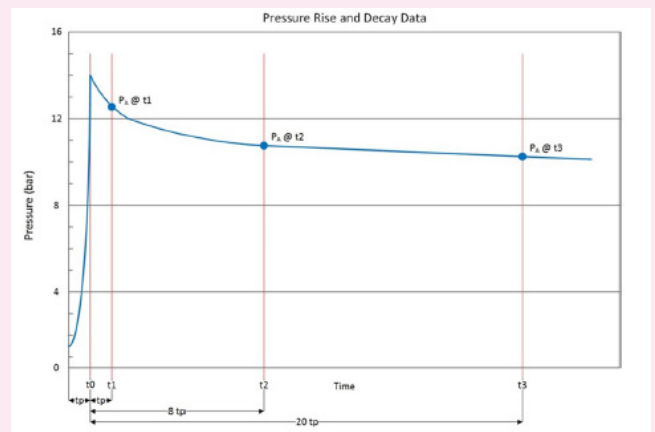
Step 4 – Testing Procedure

- Fill the pipe with water from the lowest point.
- Use a foam swab to remove as much air as possible from the pipeline. The preferred limit is 4% air content (up to 8% may be acceptable).
- Raise the pressure from static pressure to STP by additional pumping in a controlled manner. Pressure changes and volumes of water should be continuously logged.
- If the volume of water is significantly more than expected, this indicates that the volume of air is greater than expected and the test should be either extended or abandoned.
- After the STP has been reached, the system should be isolated, the pump shut off and the pressure decay logged for the minimum test decay time of 1 hour or 20 times the ramp up time to reach STP (whichever is greater).
- Any water used for testing shall be disposed of in a safe and environmentally suitable fashion. All water used for testing shall be clean and free from impurities. Discharge of the test water to sewers in the control of Irish Water shall not take place without Irish Water's express approval.
- **NOTE:** Pre-pressurisation is not permitted and will result in a failed test.



Step 5 – Test Analysis and Report

- A test report should be provided for each test in accordance with the requirements outlined in Section 4 of WIS-4-01-03.
- The test pass/fail criteria are outlined in Section 5.4 of WIS-4-01-03.



Step 6 – Service Connection Test

- The procedure for testing of service connections is as set out in WIS-4-01-03.
- The service connection should not be tapped to the main line at the time of the test.
- Use a hand pump to raise the pressure of the service pipe and top tee to 18 bar and maintain the pressure for 2 mins.
- Inspect the service connection visually during the test and if no leaks are identified and pressure maintained, then the test is a pass. If a leak is identified, the service connection should be replaced.



Step 7 – Test Results

- Maintain and record results of each test.
- Test results are to be included in the final documents which are submitted to Irish Water prior to connection.