

Background

Where a development requires a fire service, the fire service designer will apply to South East Water for Pressure and Flow Information (PFI) to inform the design of internal fire services.

The PFI presents the static and residual pressure in the tapping main of interest at different flow steps until maximum flow can be reached.

For different reasons PFI information may not be available and the fire service designer is required to carry out a field test on the nearest South East Water hydrant to determine pressure and flow information.

We also advise that a field hydrant test should be carried out to validate the PFI information provided by the hydraulic model.

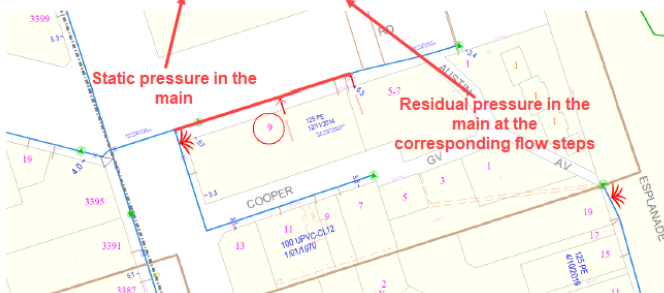
This guide note is intended to provide clarification on South East Water’s approved field-testing method and the subsequent steps to determine comparable results to the 95th percentile pressures and flows provided on the PFI statement.



Pressure and flow information (PFI) Single tapping fire flow

Date of issue	27/02/2023	Property	Lot 1, 9, HOTHAM ROAD, SORRENTO, 3943	Top water level (m)	68
Date of expiration	27/02/2024	Tapping main	125 PE	Assumed elevation (m)	20

95 th percentile fire flow information												
Flow (L/s)	0	10	15	20	25	30	35	40	50	60	75	100
Residual Pressure (m)	45	41	39	35	32	28						



Pressure and Flow statement provided by South East Water

The South East Water PFI statement provides residual pressures at a range of flows during peak conditions. The PFI information is a calculated estimate from mathematical models of the water supply system.

Typical network demand will be lower than the observed peak demand day for 95% of the time meaning that often field results are more favorable than those shown on the PFI report.

Figure 1: Typical PFI statement produced by South East Water

Why is my field test result so different to the South East Water PFI statement?

PFI data provided by South East Water represents the residual pressure for a range of fire flows in the supply main. This data is derived from hydraulic modelling.

Fire service testers will typically measure the flow and pressure at one hydrant through a standpipe (Figure 2).

These results will always return pressures significantly lower than those supplied by South East Water especially at high flowrates due to head loss through the hydrant and associated equipment. If a fire service designer wants to obtain comparable results then they need to follow the testing method as outlined in Appendix L of AS2419.1:2021 (Clauses L.5.2 “Flow Measurement method”) as followed by SEW when doing our own field investigations. This can also be found in the 2005 and 2017 Standard.



Figure 2 Incorrect hydrant test set up

This method uses a separate hydrant to measure the residual pressure in the main.

If South East Water’s approved field test method as per the Standard has been followed and the results are not comparable to the PFI statement, please contact Faults and Emergencies on 132 812 and we can investigate a possible cause, such as a closed network valve in the area or planned works in the vicinity.

Field Test Method

South East Water’s approved field test method is the method described in AS2419.1-2021 Appendix L Section L5.2 Flow measurement method. The following steps are referencing the standard.

Perform hydrant flow test

The following parameters need to be determined for the test:

1. Pressure at “Hyd A” to be measured
2. Flow at “Hyd B” to be measured

The location of Hydrant B should be located as close as possible to the customer site.

The location of “Hyd A” is usually:

- For testing of dead-end, branch mains: The last hydrant on the end of the main. The second-last hydrant will be the flowing hydrant; or
- For testing of through mains: The next hydrant along the main closest to the flowing hydrant.

Equipment required

Hydrant A – Pressure measuring

- A pressure gauge coupled to either a hydrant stand-pipe or a hydrant cap with a pressure tapping;



Hydrant B – Flow measuring

- Hydrant Stand pipe
- Calibrated Flow measuring device
- A flow regulating (ball) valve will be required on the outlet of the flow gauge
- Diffuser for safe water discharge



Method

1. Contact South East Water on 132 812 and notify the Network Operations Control Centre (NOCC) to receive approval to do the test.
2. Ensure appropriate traffic and pedestrian management is in place, and members of the public are protected from water discharge.
3. Install the stand pipes on hydrants.
4. Install the pressure gauge onto the pressure monitoring hydrant. Once stand pipes are in place, flush hydrant until water "runs clear". - This will prevent damage to flow measuring equipment.
5. Ensure water is discharged safely to the environment.
6. Depending on the pressure gauge type, air may need to be bled from the pressure line.
7. If a hydrant cap/mechanical pressure gauge combination is used, the pressure gauge must be laid on a level close to the ground in order to remove the variability in readings that would occur if the gauge was otherwise hand-held at different heights above ground.
8. Install the flow meter on the standpipe and then attach the hoses - Diffusers may assist with safe dispersal of water.
9. With standpipe open and ball valve closed confirm a 'tight seal' is achieved for accuracy of measurement.
10. Flow hydrant in increments of 5L/sec from 0 to the limit of the hydrant fitting. Move up each increment once the flow and pressures have stabilised at each step (5 - 10 - 15 - 20 L/sec)
11. If dirty water is noticed, slow flow to 10L/sec (max) and flow hydrant until water "runs clear".
12. Record results.
13. Remove measuring equipment / Standpipe and re-seat the hydrants; - If hydrant is unable to be re-seated (leaking) notify control room operators immediately.
14. Demobilise from the hydrant site and notify the NOCC that site is demobilised.

It is the responsibility of the contractor to carry out the procedure in accordance with the relevant safety laws.

Important note:

When verifying a PFI statement by hydrant flow testing, do not exceed the maximum flow rate provided on the PFI statement. If no PFI is available, the maximum flowrates are stated in the below table.

South East Water limits velocity in cast iron cement mortar lined pipes to protect the lining. Do not exceed flowrates listed below when conducting hydrant flow testing on CI or CICL mains.

Nominal Pipe Diameter (mm)	Maximum Hydrant Test Flow Rate (l/s)
<100	4
100	20
150	35

Hydrant testing is **NOT** permitted on recycled water mains. Contact South East Water if an indication of typical pressure and flow is required from the recycled water network.

Need to get in touch?

You can request asset information through our PropertyConnect® website southeastwater.com.au/propertyconnect or download our **SEWmap** app on the App Store or Google Play.

Alternatively, you call us on **9552 3770**, **Monday to Friday** between **8 am** and **5 pm**.

Please call the NOCC on 132 812 to notify of a hydrant test and we can inform testers of any potential works that are happening in the area that could affect test results or sensitive customers in the area that could also be affected (eg. Dialysis patients). Also advise the NOCC if a hydrant cannot be located.