4.4.15 Testing

Testing of drains shall be by either the Water Test or Low Pressure Air Test as outlined in this section (based on tests prescribed in New Zealand Building Code E1/VM1).

For subdivisions, all sewer and stormwater pipes will be tested upon completion of construction, at the applicant's expense, as part of the council's approval process. The council's representative shall be present during the test, and will sign any appropriate documentation to verify the test if successful. A minimum of 24 hours of notice is required to be given to the council prior to the test being carried out. The developer shall provide all fittings, water and materials to carry out the test.

For subdivisions, the developer is required to have met the following requirements prior to pipe testing and council arriving on site:

- Trenched and pipes laid.
- Bedding and surround material, top and bottom shall have been laid over the pipe. Minimum 100 mm top and bottom of pipe.
- All pipe junctions exposed including laterals and inspection eyes.
- Lines flushed and all residual debris cleaned out.
- All fittings and connection to have been installed prior to pressure test.
- Lines to have been pressurised overnight to the required pressure prior to the test commencing.

For renewals, all mains and branch pipelines, including connections may be tested after backfilling.

4.4.15.1 Water Test

The upstream end of the section under test shall have a minimum head of 1.5 m above the pipe soffit. The maximum head at the lower end of the pipeline shall be 6 m.

Concrete and earthenware pipes shall be soaked for 24 hours prior to the test. Care shall be taken to ensure that all air is expelled when filling the pipe with water.

For concrete and ceramic pipes, the amount of leakage shall not exceed 0.5 millilitres per millimetre diameter per metre length per hour measured over a minimum period of 30 minutes. This is equivalent to 1.125 litres of leakage in 30 minutes for a 30 m long 150 mm diameter pipeline.

For uPVC and HDPE pipes there shall be no leakage after 5 minutes.

4.4.15.2 Low Pressure Air Test

The Low Pressure Air Test is applicable to pipelines only and should not be used where new manholes are required to be tested also. It is recommended concrete and earthenware pipes are soaked prior to the test being completed to ensure a positive test.

Air is to be introduced into the pipeline until a pressure of 3 kPa is reached (300 mm water gauge pressure).

Time is to be allowed for the air temperature to become uniform and pressure to stabilise, typically at least 3 minutes.

The air supply is to be disconnected and the pressure drop measured after 5 minutes.

The pipeline is acceptable if the pressure drop does not exceed 0.5 kPa (50 mm water gauge pressure).

(Note: The low-pressure air test is highly susceptible to temperature fluctuations. A 1O C change in temperature can result in a 30 mm change in water gauge pressure. It is recommended to soak concrete and ceramic pipes prior to a low-pressure air tests.)

4.4.15.3 CCTV Inspection

The council may require the drain to also be inspected with a colour CCTV camera. This inspection shall be additional to the water or air test. Any defects detected by the camera inspection shall be made good and the relevant section of pipeline tested again. Contractors are advised to carry out their own test before backfilling the trench.

Acceptance of the drain will not be given until it has passed the water or air test and any CCTV inspection required.

4.4.15.4 Testing of concrete manholes

Manholes shall not typically be tested. The allowable leakage (1 millilitre/millimetre diameter/meter length) over the typically short depth of the manhole is optically difficult to detect. Notwithstanding this, all manhole joints shall be sealed and any obvious sign of infiltration or exfiltration shall be remedied prior to commissioning.

4.4.15.5 Pressure Line Testing

Any pipelines that are subject to pressure, such as pumped rising mains or high-pressure inverted siphons, shall be tested to the same requirements as a water supply pipeline of an equivalent material and pressure class.