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Tidal technology to stop flooding

A large 1.6 metre valve that stops tidal waters getting into the stormwater network will help stop flooding in the city centre during heavy rainfalls.

Last week a WaStop valve was installed in the harbour outlet at the bottom of Semple Street. Porirua Mayor Nick Leggett says underground infrastructure is a main focus as the Council moves forward.

“This is a response to the flooding issues we sometimes face in Porirua. The city centre is low lying and we need to ensure that, in heavy rainfall, high tides encroaching up into the stormwater network don't cause additional problems.”

Porirua was the first Council in New Zealand to test the valves, which are a Scandinavian design called WaStop. Wa in Swedish means water.

Council's Water Services Engineer Desmond Scrimgeour says the valve stops tidal flows entering the drains through the use of a cone-shaped rubber membrane.

“Porirua City Council has led the way in utilising this technology and a number of other local authorities have heard about it, come to see how well they work, and are now using them in their own districts.”

Des says there are a number of useful applications for the WaStops, but for now Porirua is only installing them at high impact, low lying harbour outlets within our stormwater network.

“Porirua City has over 70 stormwater outlets into the harbour and over the past 18 months we have installed 15 WaStop valves to stop the encroachment of tidal waters that take up vital network capacity.

“This has given us a large gain in available capacity and saved us money by not having to upgrade infrastructure to obtain the same results. It's an effective and innovative alternative to the huge costs of building new infrastructure.”

Council's Water Services Engineer Desmond Scrimgeour explains to Mayor Nick Leggett how the WaStop valve works to keep tidal water out of the city's stormwater network.



Porirua has a number of outlets that are very flat on their approach to the harbour, which generally means they are severely influenced by high tide.

“The problem with the outlets is that if a rainfall event coincides with a high tide, the ability of the stormwater network to discharge is severely restricted,” says Des.

This creates a build up of water levels within the network and can restrict flow into the system from private properties, leading to localised flooding or ponding.

During a storm event, the WaStop operates when the flow begins to build up behind it at the outlet - it takes very little head to open the WaStop, allowing normal discharge into the harbour. As the flow recedes within the network and the pressure and head reduce, the WaStop then adjusts and closes once again stopping infiltration or back flow.

“This will also serve the city well into the future by helping to combat the effects of predicted sea level rises,” Des says.

TAKE A JOURNEY DOWN THE PIPES OF PORIRUA

Porirua residents can now look inside the city's sewer, water and stormwater network using an online model that's normally reserved for the Council's internal engineers.

Core infrastructure is becoming increasingly more of a focus not just for engineers but for everyone. Now for the first time, the Council is opening up its network models so you can view Porirua's underground services.

“This is a unique and fascinating way for the public to see what lies beneath the city in an exciting realistic view,” says Water Services Engineer Desmond Scrimgeour.

The service models have been combined with Google map, Google Earth, and Street View for an easy visual journey. You can access the model Porirua Pipeviewer from the homepage on the Council's website at www.pcc.govt.nz.

Once into the model simply click on the Map Layers on the left hand side. They can turn on or off a range of interesting attributes related to the infrastructure servicing the city.

By clicking on any pipe within the network a range of options are presented in a pop up window. This includes

information relating to the asset and incorporates a video showing the insides of the sewer line. Engineers use this information to assess the pipe's deterioration and structural integrity. “This allows the public to look at and gain an understanding of the complexity of the networks beneath the city. It also gives the ability to search for any issue that may be of interest; like localised flooding or where services run underneath individual properties.”

Des says the model doesn't take long to get used to and people soon pick up the abbreviations such as SS for Sewer Services or SW for Storm Water.