

Document 2: 2018 Large Diameter Watermains Inspection Results and Corrective Action Plans

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The City has been completing inspections of large diameter watermains for 12 years. A formal and targeted inspection program was established in 2012. The main benefit of this program is the ability to proactively assess and identify deficiencies that can be addressed in a planned and controlled fashion without negatively impacting customers. There are currently 237km of large-diameter watermains ($\geq 610\text{mm}$) in the City. The expected service life is between 80 and 110 years and the average age is approximately 37 years.

A risk-based prioritization approach, considering competing priorities within the drinking water system, is used to establish the annual program. Of particular priority for inspection is approximately 52.4 km of pipeline that was installed from ~1972 to 1979 that has experienced a higher degree to wire breaks leading to premature failure. It is recognized industry-wide that the 1972-79 C301 pipe, have experienced a modest tendency for premature failure, as compared to CPP material manufactured and installed before and after this period. To date, the City has completed 34.1 km (65%) of structural condition assessment and 26.2 km (50%) of leak detection on this cohort of pipes. In total, 42.2 km (17.2%) of structural condition assessment and 71.4 km (30.1%) of leak detection have been completed on large-diameter watermains ($\geq 610\text{mm}$) in the City.

A total of 10.9 km of large-diameter watermain was inspected for leaks and 0.9 km for structural deficiencies in 2018.

The findings of those inspections are shown in Table 1

Table 1 - Summary of Condition Assessment Results for 2018

Description	Length (m)	Inspection	Results
Morgan's Phase 2A	394	Structural	None of the 63 pipes inspected were found to be distressed (0%)
Bridlewood B	547	Structural	11 of the 74 pipes inspected were found to be distressed (14.9%)
St. Joseph C	2581	Leak Detection	No leaks were found during the inspections.
417 East/ West	8564	Leak Detection	2 leaks were found, both on valves. These do not affect the integrity of the watermain and will be addressed through normal maintenance.

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** includes pipes exhibiting anomalous signals with distress-like properties and/or longitudinal cracking, further inspection may be required to confirm results*

The following activities are planned or have been completed to address the inspection results for the 2018 Large Diameter Watermain program.

- Britannia B- A repair project was completed in the Fall of 2018 to repair the distressed pipes using internal Carbon Fibre Wrap.
- Bridlewood B- 11 distressed pipes were found. A Failure Risk Analysis was performed by SG&H, 3 were recommended to be repaired in 3-5 years, the rest are to be monitored long term. A repair project will be initiated by Asset Management to address the most urgent pipes in the recommended timeframe.