

Document 2 - Large Diameter Watermains Inspection Results and Corrective Action Plans

The City has been completing inspections of large diameter watermains for 10 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 is vulnerable to premature failure. To date, the City has completed 33.2 km of structural condition assessment and 25.9 km of leak detection on this cohort of pipes.

The inspection program for 2017 was completed in the fall. In total, 22.4 km of large-diameter watermain was inspected for leaks and 7.2 km for structural deficiencies. The findings of those inspections are shown in Table 1.

Table 1: Summary Condition Assessment Results for 2017

Description	Inspection	Results
Bridlewood A	Structural	1 pipe requires immediate repair, 2 pipes to be monitored long term
Orleans D	Structural	0 pipes exhibiting distress
Britannia B	Structural	5 pipes** 44 pipes to be monitored long term
Woodroffe A North	Structural	3 pipes to be monitored long term
Carlington 1W	Leak Detection	0 leaks
Bridlewood A- Phase 1	Leak Detection	0 leaks
Orleans D (includes Orleans A, Orleans B, Orleans C and Orleans D)	Leak Detection	1 leak

***includes pipes exhibiting 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 2017 Large Diameter Watermain program.

- Bridlewood A - One pipe was identified as having broken wires and a potential cylinder defect. Based on a subsequent failure risk analysis, it was recommended to undertake a repair. This pipe was replaced in May 2018. The 2 pipes with some level of distress will be re-assessed during the next inspection cycle.
- Britannia B - Five pipes were identified as having distress-like properties. A subsequent failure risk analysis recommended performing visual and sounding internal inspection to verify the nature of the distress. The internal inspection was completed and three pipes were identified as needing immediate repair and two others were identified with issues at the joint. A repair project has been initiated and repairs are expected to be completed as soon as possible. In addition, 44 pipes with some level of distress will be re-assessed during the next inspection cycle.
- Woodroffe A North - The 3 pipes with some level of distress will be re-assessed during the next inspection cycle.
- Orleans D (leak detection) - A repair has been completed to fix the leak found during the Smartball inspection. The watermain is now back in service.