The City of Hamilton, through their continued trunk watermain condition assessment program, conducted a Condition Assessment (CA) on the Charlton Avenue watermain, one of their critical large diameter cast iron watermains. The project was separated into three phases: 1) Watermain selection, 2) Determine optimal CA approach; and 3) Results of the CA inspection.

The initial phase involved a data review of the top five risk ranked watermains (determined from a previous project) to select an appropriate watermain for detailed CA. The availability of data along with City operations staff discussions their views on the top five watermains drove the decision to selecting the Charlton Avenue watermain. Some of the key considerations included: several large valves that were scheduled for replacement in 2014; the watermain has a history of bell shear failure and was installed over 100 years ago.

The second phase consisted of selecting and executing the CA approach method for the Charlton main. The three options were evaluated as potential CA methods were Field Engineering (the use of direct evaluation techniques such as bore holes and pressure monitoring); Visual Inspection (the confirmation of surrounding soils and exposure of the exterior surface of the pipe); and Technology Inspection (the use of acoustic leak detection, RFT, electromagnetic inspections and ultrasonic wall thickness testing). Key operational elements important to the City were taken into consideration to determine a suitable approach to the CA of the Charlton watermain. Three operational elements applicable to this specific project were minimal impact on operations, completion of inspections within a reasonable length of time and best value for expected results. The City had limited resources available for pipeline modifications, flow regulation and inspection duties and preferred results within a short timeframe (i.e. six months) and at a reasonable cost. The Field Engineering option was selected as the optimal CA approach for this particular circumstance.

The results of the condition assessment for the Charlton Avenue pipeline showed that the watermain is in good condition. The pressure monitoring showed that no transients present during the analysis period, boreholes revealed that corrosive soils were present and that the watermain was partially submerged throughout analysis period and that no leaks were identified with acoustic leak detection.

This presentation will focus on the history of the Charlton Avenue watermain, include detailed descriptions of the Condition Assessment results and bring to light items related to the condition assessment of large diameter cast iron watermains installed at the turn of the century.