3.3 Tyrrell Museum

The twinned 100 mm diameter HDPE sanitary main siphon between the Tyrrell Museum and Nacmine was installed in 1985 and is assumed to have a 100-year service life. Under the proposed new agreement for the Town and the Tyrrell Museum, the Tyrrell siphon would be owned by the Tyrrell Museum. At this same river crossing location, the Town owns and operates a 180 metre and a 250 mm diameter PVC water main installed in 1983. With a relatively recent install date and being plastic pipe with no history of failures, this is assumed to be the lowest priority for rehabilitation or replacement of the Town's river crossing pipeline infrastructure. There is no immediate concern with this river crossing infrastructure.

3.4 North Drumheller

3.4.1 Scope of Work

The river crossing infrastructure near the North Drumheller Lift Station location, ***Figure 4***, is a 200 mm diameter steel forcemain and a 250 mm diameter steel water main. The forcemain and water main were installed in 1970 and are approximately 175 metres and 165 metres long, respectively. These pipes may be approaching their expected service lives.

3.4.2 Construction Options and Cost Estimates

There are two options for the replacement of these pipes:

1. Installation along new alignments adjacent to the existing infrastructure undertaken by directional drilling.
2. Pipe bursting the existing infrastructure.

Option 1 allows for all services to continue during construction activities with minimal impacts to residents.

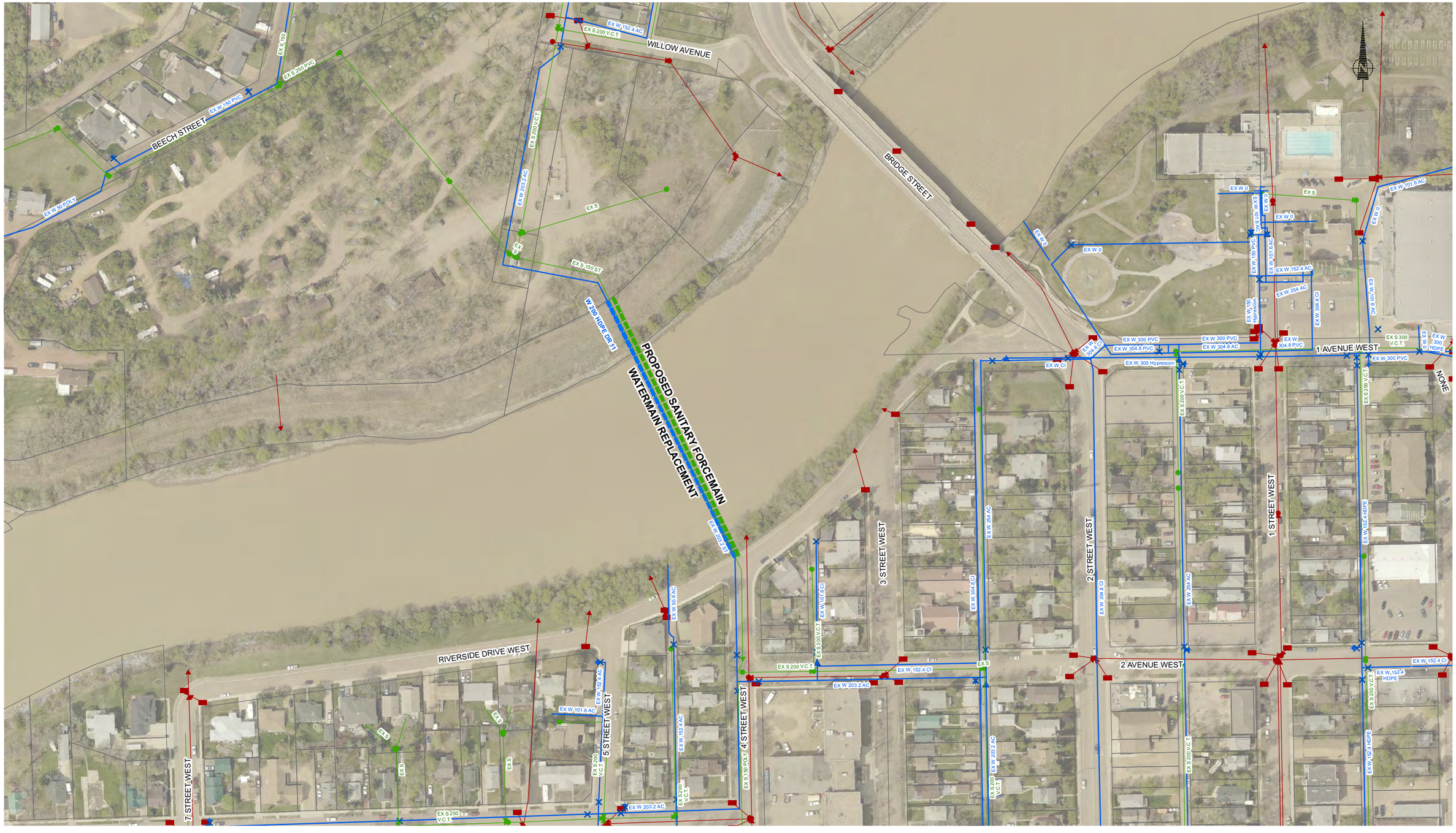
For Option 2, pipe bursting, the existing water main would be shut off and, using pipe bursting technology, a new 200 mm diameter HDPE forcemain would be installed in that alignment. Once connected, the existing forcemain could then be abandoned and used as the host pipe to install a new 250 mm diameter HDPE water main using pipe bursting technology. WaterCAD modelling confirmed that the Town's distribution system can provide PHD at adequate pressures with the North Drumheller

river crossing water main out of service. However, during this water main shut-down, the model indicates that fire flows during MDD would be limited in the area north of the river. This could be mitigated by implementing water restrictions or completing the work in the winter. At detailed design, this would have to be examined further to determine feasibility. Also, the existing alignments and pipeline depths under the river would have to be deemed adequate for pipe bursting in detailed design.

The existing 200 mm diameter forcemain is assumed to be adequately sized for future growth. A future peak flow of 25.0 L/s was defined in 2003 accounting for 25 to 50 years' growth. This would produce a velocity of 0.8 m/s in the forcemain which results in an acceptable level of maximum head loss. Even a 25% increase to 31.5 L/s over and above the 100 lots of new development accounted for in the 2003 report would maintain the forcemain at an acceptable 1.0 m/s, resulting in satisfactory maximum head loss.

Some open cut pipe installation will be required to tie into the existing infrastructure on each side of the river. The cost associated with both options is listed below:

Crossing	Option	Cost
North Drumheller	1. Directional drill new alignment a. Forcemain - $200,000 b. Water Main - $205,000	$405,000
	2. Pipe bursting	$460,000



- Valve
- Hydrant
- Reducer
- Water Main
- Sanitary Manhole
- Storm Manhole
- Catchbasins
- Storm Main

Proposed Upgrades

- Watermain Replacement
- Sanitary Forcemain Replacement

NOTE:
PROPOSED PIPE MAY BE PVC OR HDPE

MPE Engineering Ltd.

TOWN OF DRUMHELLER

INFRASTRUCTURE CAPITAL PROJECTS REPORT
WATER MAIN AND FORCEMAIN REPLACEMENT
NORTH DRUMHELLER CROSSING

SCALE: 1:2,000	DATE: JANUARY 2018	JOB: 2450-040-02	FIGURE: 4