Executive Summary

The City of Saskatoon (City) authorized Associated Engineering (AE) to complete a feasibility study to determine the best location and method to install a new wastewater river crossing in order to service future development in the North East Sector with an ultimate service population in the range of 300,000 people. The study was initially focused on using open cut and trenchless technologies to install a siphon style crossing but was expanded to explore a utility/pedestrian bridge that could utilize a gravity based crossing.

The study evaluated the various challenges that would be encountered such as land ownership, geotechnical conditions, environmental and heritage issues, and topography and determined which crossing location within the study area would be most beneficial to the City based on those factors. Using flow estimates provided by the City, the study estimated the size of pipes that would be required. The various methods of installation were then evaluated and it was found that the study area is suitable for all the methods that were identified. An additional option was proposed by AE and following discussion with the City was also considered; the construction of a utility bridge or pedestrian bridge supporting the utility crossing. A bridge presented a different set of challenges but also provided the City with a broader range of benefits, especially if a pedestrian deck was included with the design.

The study found that the recommended crossing location would be a perpendicular crossing immediately south of the wastewater treatment plant, with an alternate alignment being a diagonal crossing starting at Agra Road on the east side and terminating just south of the wastewater treatment plant. The estimated costs for the crossing ranged from a low of $10M - $15M for the open cut to a high of $20 -25M for a utility tunnel, with costs for horizontal directional drilling, and microtunnelling being somewhere in between. For the bridge options the estimated costs were $12M -$17M for a utility only bridge and $20 - $25 M for a pedestrian bridge. Each of the crossing options offer advantages and disadvantages that must be further considered by the City. The cost estimates provided are for comparison purposes only and will need to be confirmed once the location and crossing style (i.e.: siphon or bridge) have been selected.

It is recommended that the City review this study and its findings with the other departments and related organizations to determine if the recommended bridge option is appropriate and suitable for the City's needs. Additional work is recommended to develop the concept and confirm the crossing location.