8.0 SUMMARY AND CONCLUSIONS

Walterdale Bridge, crossing the North Saskatchewan River near Edmonton's downtown, is approaching 100 years of age and the end of its useful life. The bridge is an important link in the City transportation system, carrying two traffic lanes northbound into downtown from Gateway Boulevard and 109 Street via Queen Elizabeth Park Road (QEPR) (two (2) lanes), and Walterdale Hill Road(WHR) (two (2) lanes and one (1) bus lane). The bridge operates at capacity during peak hours, which results in significant congestion on the south approaches, particularly during the AM Peak.

The primary objective of "Walterdale Bridge Replacement and Approach Roads Evaluation, Concept Planning Study," was to define the location and alignment of the new Walterdale bridge, crossing the North Saskatchewan River. The Study Team was requested to consider and evaluate functional signature bridge options for this high profile crossing that provides one of the main gateways to downtown Edmonton.

A secondary objective was to develop and evaluate road alignment options for both QEPR and WHR, in conjunction with the new bridge alignment. This objective was to address immediate approach roads in the vicinity of the bridge as well as road improvements on the south bank. Although south bank improvements were ultimately deleted from the scope of the assignments, the current road improvements for Queen Elizabeth Park Road have flexibility to support south bank improvements in the future. Right-of-way should be protected to facilitate future implementation of south bank improvements.

The Study was also required to consider the numerous development plans and initiatives that are currently underway or planned for the surrounding area.

The Planning Team initially developed twenty-six (26) road alignment options for consideration, which were reduced to four (4) options through a screening process by the Project Team. The four (4) road alignment options and four (4) bridge style options (Girder, Cable Stayed, Extradosed and Arch) were presented to the Public at an Open House in November 2011. In January 2011, the Study Team was requested to refocus its efforts on the bridge replacement and vicinity approach roads only and leave the south bank for a future Study.

The Study Team developed and evaluated numerous river crossing alignment options for the bridge and concluded that an alignment that allowed the existing bridge to remain in service while the new bridge was being constructed was not only desirable from a traffic accommodation perspective, but would also be required to facilitate delivery within the schedule. If the numerous utilities which are located on the bridge are to be removed prior to construction, a two (2) year approval timeline may be required. The proposed bridge alignment at fifteen degree (15^{o}) skew east of the existing bridge is the recommended alignment, but will require relocation of the Interpretive Belvedere on the north side of the river, which must be treated with sensitivity.

Our evaluation also concluded that a three (3) lane northbound bridge would meet the traffic demand while a southbound lane serving Kinsmen could not be justified based on demand and cost. Pedestrian facilities on the bridge include a multi-use trail on the east side and a sidewalk on the west side. Opportunities for enhancement of pedestrian facilities on the bridge could be considered in future stages of implementation but have not been included in the cost estimates included in this report.

The recommended roadway plan, profile and cross-sections are illustrated on Exhibits 3.11 through 3.15 and show the extent of WHR and QEPR improvements. A reconfigured intersection at QEPR and WHR controlled by a two phase signal will provide enhanced operation and safety at the intersection. The road will generally be raised to meet the new bridge elevation.

Walterdale Hill Road will be modified to a two-lane northbound cross-section, to provide enhanced pedestrian facilities along the north side of the roadway between Saskatchewan Drive and Kinsmen Recreation facilities. This section of roadway will no longer provide an exclusive bus lane, but rather a transit queue jump will be implemented on 109 Street northbound at 87 Avenue.

The existing Walterdale Bridge and approach roads, QEPR and WHR, can remain open and operable during construction of the new bridge, and only short term closures will be required for reconstruction of QEPR due to grade and alignment adjustments. Reconstruction of WHR is not expected to require any closures.

In Phase 1 of the Study, the Team considered the use of girder, extradosed, arch and cable-stayed alternatives for the replacement bridge on a variety of road alignments. From consideration of project constraints, aesthetics, and integration into the urban environment, a **through-arch structure** is recommended for the new bridge. The arch structure is a functional signature bridge that will form an attractive entrance to downtown Edmonton. The bridge will have an innovative urban design complimenting the “West Rossdale Urban Design Plan,” and respecting the heritage of the site.

The structural details include a bridge approximately 240 m long with rise of approximately 40 m. A significant advantage of the arch bridge is that it can be constructed without permanent piers in the river, which could be a significant advantage in terms of environmental approvals. The south end of the bridge must be raised about 2.5 m to clear the 100 year flood level. The recommended bridge plans and renderings are illustrated on **Exhibits 4.15A through 4.21.**

World renowned Artist Ken Lum retained through the Edmonton Arts Council has been working with the Project Team for the past two months. Ken will continue to work through the next phases of the project in developing his art, either as part of the bridge or as stand alone pieces.

The project impacts quality park land and pedestrian facilities south of the river. Landscape enhancements and pedestrian underpasses of QEPR and WHR have been

included. Further pedestrian facility enhancements on the south and north banks have been identified for consideration, but are not included in the Study Cost Estimate.

The bridge is located in an area of significant historical resources importance, including the Fort Edmonton Cemetery and Traditional Burial Ground at the south east corner of Rossdale Road and 105 Street. The bridge project avoids the known cemetery and burial grounds, but impacts a small portion of the 2005 subdivided cemetery parcel, which does not appear to contain any human remains. However, a Historical Resource Impact Assessment as well as additional aboriginal consultation will be required prior to implementation of the bridge project. Relocation of the Interpretive Belvedere and a protocol for internment of human remains, if encountered during construction, must also be developed.

Existing Walterdale Bridge is a listed Historic Resource, and therefore approvals for removal must be obtained via appropriate protocols and Council approvals.

Environmental approvals including Canadian Environmental Assessment Act (CEA) and City of Edmonton Bylaw 7188 will be required, as will Federal Navigable Water Act and Department of Fisheries and Oceans approvals. Although the new bridge is not expected to require instream work, demolition and removal of the old bridge will require instream work and accordingly the appropriate approvals.

Timely approvals are a major risk to implementation of the project, and a diligent and sensitive effort will be required. The approval to change the 2005 subdivision boundary of the Fort Edmonton Cemetery Site and Traditional Burial Ground is also a potential risk to implementation.

Estimated cost of the new bridge including approach road modifications and removal of existing bridge is approximately $130 M. Design of the bridge is expected to require ten (10) months, based on an aggressive schedule, while construction is expected to require 24-30 months. The arch bridge would be considered a reasonably complex construction project. As the recommended bridge alignment permits the existing bridge to remain in service during construction, traffic accommodation will require only minimal short term road closures or detours.