## EXECUTIVE SUMMARY

This study focuses on the detailed functional planning for the future twinning of approximately 55 km of Highway 63 from north of Highway 28 to north of Township Road 640 (Ellscott Access). The objective of the study was to ascertain how to twin the existing highway to minimize environmental, landowner, utility, and other impacts; as well as to address access management requirements along the corridor. The study was commissioned as part of the broader Northeast Alberta Transportation Corridor (NATC) planning assignment commenced in October 2005 towards establishing a future freeway route from Edmonton to Fort McMurray.

The study limits extend from 1.91 km north of the junction of Highways 28 and 63, approximately 50 km northeast of the City of Edmonton, to 3.3 km north of the Ellscott access, located approximately 10 km southwest of the Village of Boyle. The study limits encompass the majority of Highway 63:00 (km 1.91 to km 49.09) and a portion of Highway 63:01 (km 0.00 to km 8.10).

The Highway 63 functional planning study was completed under the direction of a Technical Review Committee (TRC), with representation from Alberta Transportation (AT), Athabasca County, Thorhild County, Village of Boyle, AMEC, and AECOM.

Highway 63 is a Level 1 highway (future freeway) under AT's service classification system that forms part of the National Highway System as well as Alberta's High Load Corridor. Within the study area, Highway 63 is currently a two-lane highway following a general north-south orientation with a pavement width ranging from 10.4 m to 11.6 m, centered within a 45.7 m basic right-of-way. The posted speed limit is 100 km/h.

Based on 2012 data, the Weighted Average Annual Daily Traffic (WAADT) within the Highway 63 study section is approximately 2,400 vehicles per day (vpd), consisting of approximately 18% heavy vehicles. It is expected that approximately 50% of traffic currently using Highway 831 between Highway 28 at Waskatenau and Highway 663 at Boyle will ultimately divert to Highway 63 through the study area. Highway 831 carried traffic volumes in 2012 that averaged approximately 2500 vpd.

For Highway 63 within this project's study limits, the historical five-year (2008 to 2012) and ten-year (2003 to 2012) average annual traffic growth rates were 3.8% and 4.1%, respectively; the projected growth rate over the next ten to twenty years is anticipated to be in the range of 4% per year, similar to both the section of Highway 63 north of this project in the vicinity of Boyle and to Highway 831. Assuming a 4% growth rate and a diversion of 50% percent of Highway 831 traffic, the study section of Highway 63 is expected to meet twinning warrants for a Level 1 highway by about 2035.

The five-year collision history (2007 to 2011) indicated that there were 236 collisions along Highway 63 within the study limits. This corresponds to an annual rate of 106.7 collisions per hundred million vehicle kilometres (100 MVkm) travelled, 6.3% less than the 2011 average

provincial collision rate of 113.9 collisions per 100 MVkm for two-lane undivided highways with Average Annual Daily Traffic (AADT) volumes greater than 1000 vehicles per day.

Within the study area, there were several constraints influencing the development of a twinned, four-lane alignment and preferred access management strategy. Although these constraints included environmental, geotechnical, and historical resource considerations, some of the existing physical constraints in the study area include:

- An existing at-grade CN Rail crossing north of Newbrook
- A cemetery, public water station, and decommissioned fuel station in relatively close proximity to the railway crossing
- Numerous rural residences and other private developments located in close proximity and/or with direct access to the existing Highway 63 study corridor

As a Level 1 (future freeway) forming part of the National Highway System, a basic design designation of RFD-412.4-130 is recommended for Highway 63 at the time of twinning to four lanes. However, consistent with all of Highway 63 from Highway 28 to Fort McMurray, the outside lane in the northbound direction will be widened from the typical 3.7 m width to 4.5 m to more safely and efficiently accommodate passing of overdimensional vehicles travelling to northern Alberta. Therefore, all else being equal, it would be advantageous from a cost perspective to twin to the east of the existing highway to incorporate the additional northbound width into the new construction, rather than widening the existing highway.

The typical design cross-section will feature a 40 m centerline-to-centerline spacing set within a basic right-of-way width of 100 m, with an additional 30 m to be provided for service roads on one or both sides as required.

At the initial expressway stage, access will be restricted to a minimum spacing of 3.2 km with closure of all other direct accesses to the highway. At the ultimate freeway stage, access will be provided only at interchanges, of which three future interchange locations have been identified for the ultimate freeway stage.

An assessment of preliminary alignment alternatives at the CN Rail crossing north of Newbrook was carried out with various improvements considered to accommodate a grade-separation of highway over rail. Alternative B was identified as the preferred alternative, and various study mosaics and standard mosaic plan/profiles are provided within the report and throughout the appendices to assist in reviewing any of the alternatives.

Input regarding potential environmental risks or, in particular, the relative comparisons of environmental impacts or wetlands compensation for Alternative B versus C at the CN Rail crossing were provided by AMEC's environmental division. A formal Environmental Evaluation was also completed for each of two study sections, in conjunction with study input and a formal Geotechnical Assessment completed for each by AMEC's geotechnical division. No major geotechnical concerns were identified for the recommended alignment during the site

reconnaissance and desktop review, with generally favourable sub-grade and drainage conditions expected along the recommended alignment.

A Historical Resources Overview and Statement of Justification (SOJ) completed by The Archaeology Group (TAG) concluded that there was low potential for undisturbed sites to be found within the study area, and that no further historical resources assessment work appears warranted for the project. Alberta Culture and Community Spirit agreed with those conclusions in May 2010. However, the EUB Coal Mine Atlas: Operating and Abandoned Coal Mines in Alberta indicates some surface and underground coal mines in relatively close proximity to the existing Highway 63 alignment east of the Hamlet of Thorhild. It was also noted by TAG at the time of a Historical Resources Impact Assessment (HRIA) for the adjacent section of Highway 28 west of the south study limit that the recording/documentation of all historic structures within the expanded Highway 63 impact zone will need be included as part of Highway 63 pre-construction work.

A comprehensive public consultation program was undertaken in conjunction with the technical components of this planning study. The public consultation commenced with a focus group meeting and public open house in Newbrook in the spring of 2010 to gather input from local landowners and residents, as well as the general public. In the fall of 2010, a final open house was held to present the recommended plans.

The recommended plans provide for twinning to the east of the existing highway alignment through the majority of the study limits (~37 km) to minimize the construction costs associated with grade-widening of the existing carriageway to accommodate overdimensional loads. A comparatively short length (~6 km) of the existing highway will be twinned to the west to eliminate a correction line at the south project limits, and to avoid impacting the cemetery in the vicinity of the CN rail crossing. New four-lane construction was recommended through the remainder of the corridor (~12 km) to accommodate future grade-separation of the CN rail crossing and to correct existing curves that would be substandard at the expressway/freeway stage.

The total cost for twinning within this Highway 63 study section, including the proposed realignment at the CN rail crossing, access management improvements and structure costs is expected to be in the order of $254M. This estimate can be broken down to approximately $127M for the expressway stage and an additional $127M for the freeway stage.