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City of Fort Saskatchewan

Final Report

Transportation Master Plan Addendum

October 2018





ISL Engineering and Land Services Ltd. is an award-winning full-service consulting firm dedicated to working with all levels of government and the private sector to deliver planning and design solutions for transportation, water, and land projects.



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 October 25, 2018
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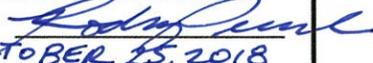
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1.0 Background

Alberta Transportation (AT) played an important role in providing traffic volumes for the City's recent Transportation Master Plan (TMP). At the time of the City's TMP, AT was completing their long-term regional travel demand modelling including the Northeast River Crossing (NERC) and provided inputs for the City's TMP. The NERC was a significant roadway to the region that would have provided for intermunicipal connectivity across the North Saskatchewan River and alleviated travel on roadways that pass through the City of Fort Saskatchewan. However, AT has recently cancelled the planning for the NERC, and there is no expectation that this project will return in the future.

AT provided inputs for the previous modelling effort required to complete the City's TMP that included the NERC. We have now been provided with updated inputs from AT to reflect removal of the NERC.

For information, the following dates reflect the timing of the TMP and NERC cancellation:

- **Fall 2017:** TMP travel demand forecasted completed in the fall of 2017.
- **Spring 2018:** TMP Final report completed and submitted to the City in May of 2018.
- **Spring 2018:** NERC announcement by the province, cancelling the project on May 25, 2018.
- **Summer 2018:** City requests ISL to update TMP reflecting the NERC cancellation.
- **Summer 2018:** ISL engages AT for providing travel demand forecasting reflecting the NERC removal.

The following is an addendum to the Transportation Master Plan reflecting the cancellation of the North East River Crossing (NERC).

2.0 Methodology

The original travel demand forecasts were updated to include new external/external traffic volumes, based on Alberta Transportation's travel demand model reflecting removal of the NERC. External/external traffic volumes are defined as traffic volumes entering and exiting the boundaries of the travel demand model within the peak hour. These volumes use the roadway network within the boundary of the model, and an increase is expected with the removal of the NERC as additional traffic will use roadways within the City. External/external traffic volumes were obtained from AT in the previous modelling exercise (with the NERC included) and are used as a reference to understand changes in traffic volumes, with and without the NERC.

Key deliverables include:

- Discussion of changes in traffic patterns between the previous modelling results and the updated modelling results with removal of the NERC.
- Updated volume to capacity exhibits showing the traffic congestion within the City's roadways with the NERC removal, and comparing with the previous volume to capacity results, which included the NERC.
- Updated capital plans, showing changes in plans from the previous TMP report.
- Discussion of the results and recommended next steps.



3.0 Results

3.1 Traffic Volume Assessment

The percent changes in external/external traffic volumes, comparing the previous traffic volumes with the NERC and the updated traffic volumes without the NERC are illustrated in the following figure. The detailed volumes are in the appendix. Note that the numbers, 10001 – 10018 are the labels used for identifying the external gates.

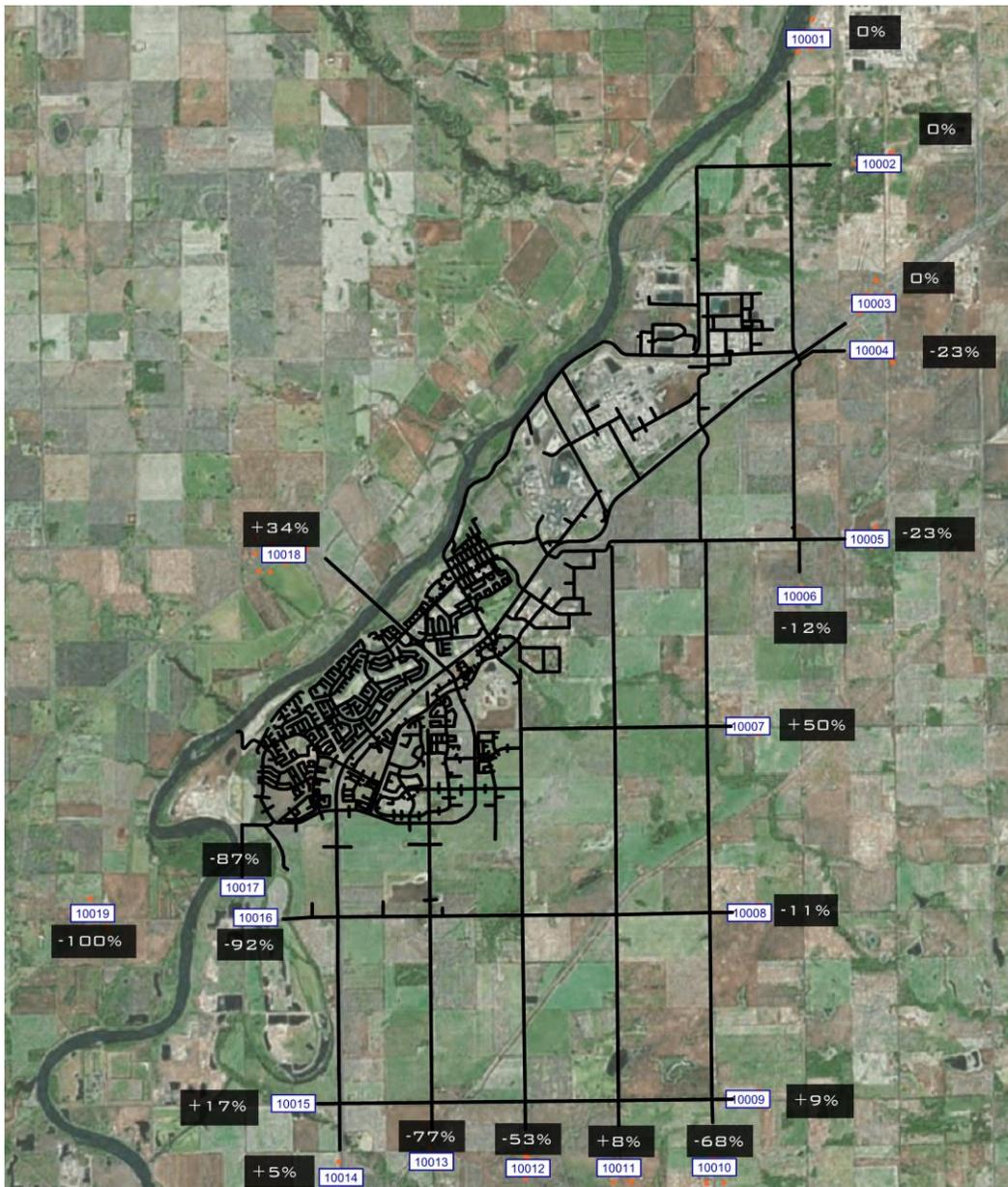


Figure 3.1: External/External Gate Traffic Volume Difference (With and Without NERC), PM Peak Hour

Notable differences include:

- Gate 10019 (NERC Crossing) = 100% reduction, previous carrying 1673 vehicles, during the PM Peak.
- Gates 10014 (Highway 21 south) and 10018 (Highway 15 bridge) = Increase by 5% (213 vehicles) and 34% (1287 vehicles), during the PM Peak with removal of the NERC. The total 1500 vehicles is comparable to the 1673 vehicles on the NERC crossing, at Gate 10019.
- Highway 21 and Highway 15 appear to absorb the roadway capacity lost with removal of the NERC.
- Gate 10013 and 10012 have reductions in volumes of approximately 1,400 vehicles, during the PM Peak with the removal of the NERC.
- There is an overall reduction in external/external volumes of approximately 15% (2305 vehicles), indicating that this volume is being absorbed somewhere outside the network.

3.2 Traffic Congestion Assessment

Traffic congestion along major portions of Highway 15 and Highway 21 increased with a majority of the impacts on the Highway 15 Bridge and around the Highway 15/Highway 21 intersection. For discussion, the volume to capacity ratio is compared for three scenarios as follows:

- **Scenario 1:** Previous TMP, 30-year travel demand model, including recommended improvements.
- **Scenario 2:** Updated TMP 30-year travel demand model, with removal of the NERC, including previously recommended improvements.
- **Scenario 3:** An additional north/south lane is added to Highway 15, from Highway 21 to the north and across the North Saskatchewan River.

Table 3.1: Volume to Capacity Comparison

Highway Segment			Travel Direction	Scenario		
Segment	From	To		1	2	3
Highway 21	84 Street	Highway 15	NB	0.42	0.39	0.39
			SB	0.89	0.90	0.90
Highway 15	Highway 15	101 Street	NB	0.38	0.44	0.43
			SB	0.88	0.93	0.93
Highway 15	Highway 21	99 Avenue	EB	0.92	1.20	0.82
			WB	0.83	1.01	0.69
Highway 15	99 Avenue	Lamoureux Dr	EB	1.01	1.38	0.92
			WB	0.80	1.01	0.67

The volume to capacity comparison is discussed as follows:

- Highway 15 from Highway 21 to 99 Avenue is over capacity, between scenario 1 (with the NERC) and scenario 2 (without the NERC).
- Highway 15, from 99 Avenue to Lamoureux Drive (representing the bridge) is at capacity in scenario 1 (with the NERC) and significantly over capacity resulting from the NERC removal.
- An additional lane per direction is needed on Highway 15, from Lamoureux Drive to Highway 21. The results of adding this lane are provided in scenario 3.



3.3 Updated Capital Plans

The following tables include the previous TMP 10-year and 30-year capital plans, with changes based on the results of the modelling with the removal of the NERC.

Table 3.2: 10 Year Improvements to Reduce Congestion to Acceptable Levels

Road Link	Model Improvement
Veterans Way from 84 Street to 112 Street	Add one lane per direction (four to six lanes)
Highway 15 at the North Saskatchewan River Bridge	Add one lane per direction (two to four lanes)
Highway 15 at the on/off ramps at 99 Avenue/95 Street	Add one lane per direction (two to four lanes)
Southfort Drive from Greenfield Way to the Walmart/Canadian Tire Access	Southfort Drive widening from two to four lanes, and Hwy 15 improvements diverted traffic
Allard Way south of Southfort Drive	New links due to development
94 Street south of Southfort Drive	New links due to development
TMP Addendum	
None: 10-year travel demand model not impacted by NERC removal	

Table 3.3: 30 Year Improvements to Reduce Congestion to Acceptable Levels

Road Link	Model Improvement
Veterans Way from 84 Street to 112 Street	New link to Hwy 15 at RR223 and higher speed on RR223
Highway 15 at the North Saskatchewan River Bridge	Remains congested
Highway 15 from on/off ramps at 99 Avenue/95 Street to Highway 15/21 intersection	Remains congested
Highway 21 from Wilshire Boulevard to the neighbourhood collector to the South	New links due to development
TMP Addendum	
Highway 15 at the North Saskatchewan River Bridge	Add one lane per direction (four to six lanes)
Highway 15, from on/off ramps at 99 Avenue/95 Street to Highway 15/21 intersection	Add one lane per direction (four to six lanes)

4.0 Conclusions and Recommendations

4.1 Conclusions

Removal of the Northeast River Crossing increases the traffic volumes entering at Highway 21 and Highway 15 in the City's 30-year, travel demand model. The traffic volume increases (1,500 vehicles) approximately reflect the amount of traffic (1,673 vehicles) removed from the model with cancellation of the Northeast River Crossing. The volume/capacity ratio Highway 15, from Lamoureaux Drive to Highway 21, including the existing Northeast River Crossing increases substantially, requiring an additional lane in each direction for a total of six lanes.

Traffic congestion also increases around the intersection of Highway 15 and Highway 21.

4.2 Recommendations

Previous TMP Recommendations (Section 11.2.4, Vehicles)

1. Based on modelling, the following improvements will be required for the 10-year horizon:
 - a. Widening of Highway 15 & 21 from Westpark Boulevard to 114 Street from four lanes to six lanes.
2. Based on modelling, the following improvements will be required for the 30-year horizon:
 - a. Industrial bypass from Highway 15 to the proposed Regional Connector.
 - b. Intersection improvements along Highway 15 and 21.
 - c. Widening of Highway 15 & 21 from Westpark Boulevard to Wilshire Boulevard.

4.3 Additional Recommendations:

1. Based on modelling, the following improvements will be required for the 30-year horizon:
 - a. Additional intersection improvements along Highway 15 and Highway 21 to support additional volumes with the cancelation of the Northeast River Crossing.
 - b. Widening of Highway 15 to six total lanes from Lamoureaux Drive to Highway 15, including the North Saskatchewan Bridge and on/off ramps at 99 Avenue/95 Street.
2. Complete an additional study for the identification of functional requirements for widening Highway 15 including short-term requirements for the next 10 years and longer-term planning requirements for the next 30 years.
 - a. Considering the major tie-in point of Highway 15 at Highway 21, the study needs to include a substantial portion of Highway 21.
3. Complete an additional study for completion of intersection improvements along Highway 15 and 21.









Appendix A
Gate Traffic Volumes





Differences – Alberta Transportation Travel Demand Model, with and without Northeast River Crossing

30 Year Model		Revised 30 Year Model (Without NERC)*		Difference
External Gates	in /out	External Gates	in /out	
10001	251	10001	251	0.0%
	48		48	
10002	20	10002	20	0.0%
	21		21	
10003	1305	10003	1305	0.0%
	1173		1173	
10004	0	10004	24	na
	0		17	
10005	41	10005	50	-23.4%
	113		68	
10006	11	10006	14	-12.2%
	14		9	
10007	36	10007	34	49.5%
	61		111	
10008	37	10008	31	-11.0%
	45		42	
10009	106	10009	98	8.5%
	117		144	
10010	118	10010	43	-68.3%
	128		35	
10011	139	10011	135	7.6%
	125		149	
10012	359	10012	170	-52.5%
	369		176	
10013	803	10013	163	-77.0%
	500		137	
10014	2327	10014	2784	4.5%
	2388		2144	
10015	69	10015	108	16.7%
	103		93	
10016	558	10016	20	-92.0%
	103		33	
10017	83	10017	2	-87.1%
	10		10	
10018	2216	10018	3031	32.4%
	1753		2225	
10019	962	10019	0	-100.0%
	710		0	



Appendix B
Volume to Capacity Values (Scenario 1 – 3)



