



Meeting Date: April 19, 2023

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Report No: PWE 20-2023

Subject: Road Needs Study

Recommendation:

THAT Report PWE-20-2023, re: Roads Needs Study be received for information;

Purpose:

The purpose of this report is to provide Municipal Council and residents an updated assessment of the municipality's road network. This study builds on the study previously completed in 2020.

Background:

Through the 2022 budget process, Council approved funding for the completion of a Roads Needs Study (RNS). The RNS is a critical document used in assisting staff with the prioritization and asset management of the municipalities 603 centre line kilometers of roadway.

Analysis:

The 2022 Middlesex Centre RNS, summarizes road system surveys conducted during the summer of 2022. All of the roads in Middlesex Centre including boundary roads and gravel roads were included in this study. The purpose of the RNS is to provide an overview of the overall condition of the road system. The study provides a rating of the general condition of the road system, by road section, and includes variables such as; structural adequacy, drainage, surface condition, horizontal and vertical alignment, and lane width. This information was gathered in accordance with the Ministry of Transportation (MTO) Inventory Manual for Municipal Roads. The study data and information was used to generate priorities for road maintenance activities and capital improvements. This information will be used to help budget and realise and maintain the roadway Pavement Condition Index (PCI) of 70 as approved by Council in the [Asset Management Plan](#) (AMP).

The following table provides a break down of the road network between gravel, surface treated (LCB), and asphalt (HCB).

Table ES.2: Surface Type Distribution

Surface Type	Roadside Environment			Total CL-KM	% CL-KM Rural
	Rural	Semi-Urban	Urban		
High Class Bituminous	39.1	20.4	49.6	109.1	18.1%
Low Class Bituminous	218.3	3.1	0.3	221.7	36.8%
Gravel	272.0	0.1	-	272.1	45.1%
Total	529.4	23.6	49.9	602.9	100%

The bulk of the roadside environment is classified as rural with 529.4 centre line kilometers or 88% of the road network, with 49.9 centre line kilometers being urban at 8% of the road network, and 23.6 centreline kilometer or 4% of road network being classified as semi urban.

Financial Implications:

As part of the RNS, several budget scenarios for maintenance and rehabilitation were reviewed; do nothing, maintain asset management plan PCI of 70, continue with existing/proposed budget (based on 2023 budget), and unlimited funding. The results of the funding over 10 years is shown in the chart below, with the corresponding impact to the entire road networks PCI value.

Table ES.6: Budget Scenario Cost and Performance Summary

Budget Scenario	Total 10-Year Funding	Overall Score (/100) (2022)	Overall Score (/100) (2032)
Do Nothing	\$0	70.3	35.0
Maintain PCI = 70 (HCB / LCB)	\$12.3M / \$10.9M	70.3	70
Total Maintain PCI = 70	\$23.2M	70.3	70.0
Unlimited Funding	\$25.3M	70.3	77.6
Proposed Budget	\$17.4M	70.3	56.8

Under the current funding scenario (based on 2023 budget) the road network will degrade over a 10 year time frame to an overall network of PCI 56.8. Using the recommendations of the approved AMP to maintain a PCI of 70 would require \$23.3 million dollars over 10 years or approximately \$2.33 million dollars per year for asphalt and tar and chip rehabilitation. This does not account for any costs associated with other improvements such as road conversion (gravel to tar and chip, or tar and chip to

asphalt) or improvements to drainage, vertical or horizontal curves. This is the cost associated with maintaining the existing network to a PCI of 70.

The second component of the RNS provided a cost summary for improvements to the road network to address identified deficiencies such as; surface type, surface width, drainage, geometric, and structural. A summary of the deficiency costs can be found below.

Table 3.15: Deficiency Cost Summary

Deficiency	Total Cost (\$)
Multiple Deficiencies	\$ 3,506,989
Surface Type Deficiencies – Now Need	\$ 8,412,414
Surface Type Deficiencies – 1-5 Yr Need	\$ 899,493
Surface Type Deficiencies – 6-10 Yr Need	\$ 3,714,082
Surface Width Deficiencies	\$ 6,986,075
Structural Adequacy Deficiencies	\$ 3,121,204
Geometric Deficiencies	\$ 2,628,400
Drainage Deficiencies	\$ 266,684
Total	\$ 29,535,341

To fix all of the identified deficiencies over a 10 year period would require a capital investment of 2.95 million dollars per year.

The below table summarises the municipalities current 2023 budgeted investments into the road network compared to the RNS recommendations.

	Currently budgeted (based on 2023 budget)	Recommended Investment as per RNS	Difference
Rehabilitation and Maintenance	\$1,800,000.00	\$2,330,000.00	\$530,000.00
Reconstruction/ Deficiency Improvement	\$1,900,000.00*	2,950,000.00	1,050,000.00
Total	\$3,700,000.00	\$5,280,000.00	\$1,580,000.00

*Old River Road and Coldstream Road realignment excluded as it was not included in the costing of the RNS deficiency review due to the unique and ongoing nature of the projects.

It is worth noting that; structural, surface type, and drainage deficiencies typically see higher operating and maintenance costs, and shorter service lives due to the underlying problems not being resolved unless through a capital project.

This financial information will be used to help inform and facilitate budget discussions and to prioritize rehabilitation, reconstruction and maintenance needs of the road network.

Strategic Plan:

This matter aligns with following strategic priorities:

- Sustainable Infrastructure and Services

The Road Needs study will allow staff and Council to prioritize the rehabilitation, maintenance, and reconstruction of the municipal road network to ensure a sustainable transportation network that meets the goals and targets set out in the Asset Management Plan.

Attachments:

Appendix A – 2022 Road Needs Study