



Technical Memorandum – Gravel Road Summary

Date: May 16, 2024 (Revised June 27, 2024) **Project No.:** 300056849.0000

Project Name: Norwich Road Needs Study

Client Name: Township of Norwich

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1.0 Introduction

R.J. Burnside & Associates Limited (Burnside) was retained by the Corporation of the Township of Norwich (Township) to conduct a Road Needs Study (RNS) to update the Township's existing road inventory and condition data. A draft report, dated December 7, 2023, was submitted to the Township and presented to council on December 12, 2023, containing the findings from the review of the Township's hardtop roads. As requested by the Township, the review of gravel roads was undertaken in the spring of 2024. A subsequent draft report, dated April 26, 2024, was submitted to the Township, documenting both the 2023 hardtop road findings and the 2024 gravel road findings.

As requested by the Township, this memo is to provide a summary of the methodology used to assess the needs of the gravel roads and recommendations pertaining to those roads, to support a planned presentation to Township Council on July 9, 2024.

The Township has a total road network inventory of 364.42 centerline km, of which 153.43 centerline km are gravel surface.

2.0 Methodology and Analysis for Gravel Roads

2.1 Gravel Condition Rating

This study uses various Ministry of Transportation Ontario (MTO) procedures for the evaluation of the condition of the roads including the following:

- SP-025 Manual for Condition Rating of Gravel Surface Roads, Ministry of Transportation, 1989.
- Inventory Manual for Municipal Roads, Ministry of Transportation, 1991.

For the gravel roads, MTO methods were used to assess the critical condition parameters (structural adequacy, drainage and ride comfort), as the technical inputs to establish a Gravel Condition Rating.

Burnside developed the “Gravel Condition Evaluation Form” illustrated in Figure 1. The form incorporates the rating schema from the *Inventory Manual for Municipal Roads* (Ministry of Transportation Ontario [MTO], 1991), such as the Structural Adequacy (SA), Drainage Adequacy (DA) and Ride Comfort Rating (RCR). The various distress types shown in the form have been collected in the field to support the overall Structural Adequacy and Drainage Adequacy values, as well as to provide information on the specific distress observations (if any) on each gravel road section.

Figure 1: Gravel Road Condition Evaluation Form

GRAVEL CONDITION EVALUATION FORM																			
Survey Date: _____					Section ID: _____														
Road (Street) Name: _____					Section Length _____					km									
Location from: _____					to: _____														
Comments: _____																			
Ride Comfort Rating (at posted speed)																			
10	9	8	7	6	5	4	3	2	1	Severity of Distress (Si)					Density of Distress (Di)				
Very Good	Good	Fair	Poor	Very Poor	Very Slight	Slight	Moderate	Severe	Very Severe	Few	Intermittent	Frequent	Extensive	Throughout					
										<10	10-20	20-40	40-80	>80					
Pavement				Rating															
Structural Adequacy (1-20)																			
Soft Spots																			
Spring Breakup																			
Potholes																			
Washboarding																			
Distortion																			
Rutting																			
Drainage Adequacy (1-15)																			
Flat Crown																			
High Shoulders																			
Deficient Ditching																			
Ponding																			
Flooding Issues																			
Vegetation Encroachment																			

To forecast the condition of gravel roads, the following Gravel Condition Rating (GCR) equation has been developed by Burnside:

$$GCR = 3 \times (\text{Structural Adequacy}) + 2 \times (\text{Drainage Adequacy}) + \text{Ride Comfort Rating}$$

Where:

- GCR is the Gravel Condition Rating, out of 100. The higher the GCR, the better the condition of the gravel road section.
- Structural Adequacy (SA) is out of 20, as determined by the distress types recorded in the field and local Town staff knowledge of typical spring performance.
- Drainage Adequacy (DA) is out of 15, as determined from deficiencies such as flat crowns, high shoulders, deficient ditching, ponding, flooding issues, and / or vegetation encroachment that may prevent roads from adequately drying.
- Ride Comfort Rating (RCR), is out of 10, as determined by the surface conditions relating to driving ease, comfort and safety, which follows the descriptions in the *Inventory Manual for Municipal Roads* (MTO, 1991).

2.2 Improvement Types

The road improvement types proposed in this study cover the full lifecycle of the road assets and include both capital improvements and road maintenance such as Routine Maintenance (grading + dust suppressant application), Preventive Maintenance (maintenance gravel), resurfacing (upgrade to a hardtop surface), rehabilitation (road base strengthening) and reconstruction (full road base replacement).

Routine Maintenance

Routine maintenance consists of ongoing grading and dust suppressant efforts completed throughout the spring, summer and fall seasons.

Preventive Maintenance

Preventive maintenance consists of the application of maintenance gravel and dust suppressant. Through discussion with Township staff, it is our understanding that the Township applies maintenance gravel on a four-year rotational program.

Resurfacing / Surface Upgrade

Resurfacing consists of minor base strengthening / placement of additional granular, placement of a low class bituminous (LCB) or high class bituminous (HCB) surface and nominal ditch and shoulder work.

Rehabilitation

Rehabilitation consists of minor base replacement / repair (localized spot repairs), placement of an LCB or HCB surface (if warranted), gravel shoulder / slope repair and nominal ditch work.

Reconstruction

Reconstruction consists of full road base material replacement, placement of an LCB or HCB surface (if warranted) and nominal ditch and shoulder repair.

2.3 Improvement Prioritization

There are two prioritization methodologies available for use in prioritizing road improvements that are required to address condition distresses. The Ministry of Transportation Ontario (MTO) has developed Priority Rating (PR) and Priority Guide Number (PGN) formulas in the *Inventory Manual for Municipal Roads*, 1991 that can be used to prioritize road improvements.

The Priority Rating (PR) developed by the MTO takes into account the condition ratings and traffic volumes to prioritize the improvements. The MTO's PR formula is as follows:

$$PR = 0.2 (100 - CR) \times (AADT + 40)^{1/4}$$

Where:

- CR = Condition Rating, out of 100
- AADT = Existing traffic volume

The higher the PR value, the higher the priority of the road section improvement relative to its condition and the traffic it is serving. This formula will help prioritize improvements that are driven by poorer road conditions and higher traffic volumes. The intent of this improvement prioritization method is to initially reduce the Township's backlog of critical needs, so that future budgets may be allocated to proactively address the full range of lifecycle needs within the road network.

It is recommended that the Township adopt a lifecycle approach to allocate budgets towards road improvement needs. Road improvements, using a lifecycle management approach may be prioritized using a Priority Guide Number (PGN).

The PGN has built-in factors which account for asset management best practices, to strive to recommend the right treatment to the right road at the right time, based on where the road section lies within its life cycle. As described in the RNS report, to be most cost-effective, timely expenditures should be made using routine maintenance and preventive maintenance rather than allowing further degradation, requiring much more costly rehabilitation or reconstruction treatments.

The MTO's PGN formula is as follows:

$$PGN = \frac{(100 - \text{Condition Rating}) * TF * LCF}{10000 * \text{Road Width} * (\text{cost per square metre})}$$

Where:

- PGN is the Priority Guide Number.
- Condition Rating is either one of the following:
 - for hardtop (HCB and LCB) road sections, the Condition Rating is the Pavement Condition Index (PCI), which is out of 100.
 - for gravel road sections, the Condition Rating is the Gravel Condition Rating (GCR), which is out of 100.
- TF is the Traffic Factor, which is an estimate of the traffic served over the life cycle of the improvement (i.e., annual average daily traffic, AADT) as follows:
 - routine maintenance TF = (Existing AADT + Yr. 10 AADT) x 0.38.
 - preventive maintenance TF = (Existing AADT + Yr. 10 AADT) x 0.42.
 - resurfacing TF = (Existing AADT + Yr. 10 AADT) x 0.5.
 - rehabilitation or reconstruction TF = Yr. 10 AADT.
- LCF is the Life Cycle Factor, which is the typical number of days that is assumed to be added to the life of the overall road asset as a result of the treatment, as follows:
 - 1095 for routine maintenance treatments.
 - 1825 for preventive maintenance treatments.
 - 3650 for or resurfacing treatments.
 - 7300 for rehabilitation and reconstruction treatments.
- Road Width is the surface width of a given road section (in metres).

Similar to the PR, the higher the PGN value, the higher the priority of the road section improvement relative to its condition, the traffic it is serving and the cost of improving the section to provide the most service to traffic for the dollar expended. This provides a measure of comparison between improvement requirements of any particular road section relative to other road sections. The PGN value for each road is summarized in Appendix A.

3.0 Level of Service Considerations for Gravel Roads

Gravel roads form a significant portion of the Township's Road network (approximately 42.10%). Maintaining the condition of gravel roads is typically dealt with as ongoing maintenance work (such as ongoing grading, maintenance gravel, dust control, etc.), unless the structural adequacy of the gravel base is poor or unless upgrading the gravel road to a hardtop surface is required to provide adequate service for the traffic volume / type and connectivity that it is intended to serve.

The condition-related needs are identified for the overall road segment and therefore localized spot improvement needs may exist that are not specifically identified in the condition rating, but which should be captured in the Township's ongoing monitoring for compliance with Minimum Maintenance Standard requirements. The maintenance / upgrade strategy for gravel roads should be based on the Level of Service that is desired by the Township, considering budget constraints and site-specific criteria which will affect whether any particular road section is a desirable candidate for any particular strategy.

3.1 Financial Comparison of Gravel vs Hardtop Roads

A financial comparison of the overall construction and maintenance costs (per km) was completed for low volume gravel roads based on a typical 7.0 m width.

Gravel Roads (low AADT)

- The cost for the supply of maintenance gravel was approximately \$18 per tonne (2023 cost) for granular A, applied at a rate of 300 – 400 tonnes per km. Maintenance gravel is applied in a four-year cycle (i.e., one quarter of the Township per year).
- Dust suppressant is applied using Calcium Chloride applied at a rate of 12 tonnes per km. The Township spent approximately \$178,000 in 2023 on dust control, which equates to approximately \$1,160 per km of gravel road.
- Routine grading is assumed to be completed four times per year for each gravel road, with problem sections receiving additional grading efforts. For the purposes of this study, grading has been assumed to cost \$150 per hour at a completion rate of 1.5 hours per km of gravel road.
- The cost for gravel road maintenance in the “maintenance gravel year” is estimated to be \$9,260 per km (i.e., includes 400 tonnes per km of maintenance gravel, dust control and grading).
- The cost for gravel road maintenance in the year without maintenance gravel is estimated to be \$2,060 per km (i.e., includes dust control and grading).

Hardtop Roads (low AADT)

- The cost of the initial road base improvement (700 tonnes of granular A) to accommodate a hardtop surface is approximately \$12,600 per km.
- The cost of placing a single surface treatment (every five to seven years) is approximately \$54,250 per km.
- The cost for rehabilitation - pulverizing, supply, and place 700 tonnes of granular A, grading and compacting is approximately \$37,100 and cost for double surface treatment is approximately \$77,000 per km, every 22 years (i.e., between single surface treatment applications).

The cost comparison of gravel vs. hardtop surfaces assumes that the road is being rehabilitated or reconstructed in Year 1 to respond to condition deficiencies. Therefore, the work required in Year 1 will reflect the existing base condition (i.e., good or fair base) and the intended surface to be implemented (i.e., gravel or hardtop). It is assumed that the resulting Year 1 base will be sufficient to accommodate a 60-year life cycle, assuming that typical maintenance and improvement work is completed to address the surface distresses throughout this period. The assumed works and costs expended during the life cycle, depending on the surface strategy and the existing base conditions, are summarized as follows:

Existing Gravel to Future Gravel – No Base Strengthening Required

- Year 1 – Maintenance gravel + dust control + grading four times = \$9,260 per km
- Year 2 – Dust control + grading four times = \$2,060 per km
- Year 3 – Dust control + grading four times = \$2,060 per km
- Year 4 – Dust control + grading four times = \$2,060 per km
- Year 5 through 60, repeat Year 1, Year 2, Year 3 and Year 4 sequence

Existing Gravel to Future Gravel – Nominal Base Strengthening Required

- Year 1 – Base strengthening (75 mm earth excavation and 150 mm granular A) + dust control + grading 4 times = \$64,780 per km
- Year 2 – Dust control + grading 4 times = \$2,060 per km
- Year 3 – Dust control + grading 4 times = \$2,060 per km
- Year 4 – Dust control + grading 4 times = \$2,060 per km
- Year 5 – Maintenance gravel + dust control + grading 4 times = \$9,260 per km
- Year 6 through 60, repeat Year 2, Year 3, Year 4, Year 5 sequence

Existing Gravel to Future Hardtop – Nominal Base Strengthening Required

- Year 1 – 700 tonnes of granular A + double surface treatment = \$89,600 per km
- Year 8 – Resurfacing (single surface treatment) = \$54,250 per km
- Year 15 – Resurfacing (single surface treatment) = \$54,250 per km
- Year 22 – Rehabilitation (pulverize + double surface treatment) = \$114,100 per km
- Year 29 – Resurfacing (single surface treatment) = \$54,250 per km
- Year 36 – Resurfacing (single surface treatment) = \$54,250 per km
- Year 43 – Rehabilitation (pulverize + double surface treatment) = \$114,100 per km
- Year 50 – Resurfacing (single surface treatment) = \$54,250 per km
- Year 57 – Resurfacing (single surface treatment) = \$54,250 per km

Existing Gravel to Future Hardtop – Increased Base Strengthening Required

- Year 1 – Base strengthening + double surface treatment = \$139,720 per km
- Year 8 – Resurfacing (single surface treatment) = \$54,250 per km
- Year 15 – Resurfacing (single surface treatment) = \$54,250 per km
- Year 22 – Rehabilitation (pulverize + double surface treatment) = \$114,100 per km

- Year 29 – Resurfacing (single surface treatment) = \$54,250 per km
- Year 36 – Resurfacing (single surface treatment) = \$54,250 per km
- Year 43 – Rehabilitation (pulverize + double surface treatment) = \$114,100 per km
- Year 50 – Resurfacing (single surface treatment) = \$54,250 per km
- Year 57 – Resurfacing (single surface treatment) = \$54,250 per km

The cost estimates used in this comparison have been based on recent data provided by the Township as well as available cost data from similar lower-tier Ontario municipalities (in terms of location, population, and climate). The lifecycle costs for the various scenarios noted above are summarized in Table 1.

Table 1: Lifecycle Costs for Gravel vs Hardtop

Scenario	Existing Base Condition	Present Value ¹ Cost per km of 60-year Maintenance/Improvement Lifecycle
Retain as Existing Gravel Road	Good	\$137,312
Retain as Existing Gravel Road	Fair	\$191,764
Conversion of Existing Gravel to LCB	Good	\$395,139
Conversion of Existing Gravel to LCB	Fair	\$444,296

¹ Present Value is based on an assumed 2% inflation rate and 4% discount rate.

In summary, the results of the cost analysis indicate that gravel surface roads may have reduced costs over hardtop roads (i.e., capital and maintenance costs), assuming a 60-year life cycle and low traffic volumes. Therefore, it is recommended that low volume gravel roads remain as a gravel surface, unless other site-specific conditions / criteria are met to justify such upgrades. Several other considerations may also be considered and may influence the decision on which surface type to apply. Some of these other considerations are difficult to associate a value to or may not provide a direct benefit to the Township. Additional considerations may include:

- The Level of Service Standard that is desired by the Township. Hardtop roads will provide improved standards for both access and traffic mobility.
- Budget availability to implement improved service standards.
- Location of any particular road section within the continuity of the overall hardtop road network (i.e., both internal to the Township and beyond the Municipal boundaries).
- Potential for a hardtop road to redistribute traffic away from other gravel roads as users prefer to select paved roads, thereby reducing maintenance requirements on the other gravel roads.
- Potential for the hardtop road to result in increased traffic volumes and higher travel speeds, which may adversely impact other road users (pedestrians, cyclists) or access to adjacent properties.
- Hardtop roads effectively waterproof the road base, which can reduce the potential for load-related damage.
- Hardtop roads reduce dust emissions.

- Hardtop roads provide improved vehicular operational characteristics (smoother ride, less noise, higher skid resistance, reduced vehicular maintenance costs and fuel costs).
- Impact on road maintenance requirements.
- Possible impact on real estate values for properties along the road.

3.2 Pre-Screening Criteria for Consideration in Upgrading Gravel Roads to Hardtop Surfaces

Some of the primary factors that should be considered when determining if any particular gravel road is a desirable candidate for upgrading to a hardtop surface are the following:

- Traffic volumes (i.e., AADT).
- Traffic types (e.g., percentage of trucks).
- Number of driveways provided with access (residential or business).
- Connectivity to other paved roads and arterial roads (i.e., Provincial Highways, County Roads).
- Connectivity to facilitate travel between points of increased vehicular demands (e.g., businesses, schools etc.).
- Road platform widths.
- Road structural adequacy.
- Drainage.
- Road conditions.
- Road geometry (alignments).
- Maintenance requirements / frequency.

Based on the factors listed above, the framework in Table 2 provides guidance criteria in the assessment of the gravel road upgrade needs, subject to the budget and Level of Service limitations set by the Township.

Table 2: Pre-screening Criteria / Considerations for Gravel Road Surface Upgrading

Item No.	Description	Criteria
1	Traffic Volume or Traffic Type	Based on the Township's historical practices, AADT is typically 400 vpd or more. However, AADT alone does not justify hardtop conversions. Traffic type (i.e., truck traffic) may also be a consideration for lower traffic volume ranges.
2	Network Connectivity	Road provides improved connectivity between existing hardtop roads, particularly for improved access to arterial roads.
3	Land Use Considerations	The road provides access to semi-urban or commercial land uses. The number of driveways served is also a consideration.
4	Road Alignment	Substandard vertical and / or horizontal curves should be improved before upgrading the surface type, to support operating speeds within a hardtop road environment. Any cost / benefit analysis should take into consideration such increased costs.
5	Road Width and / or ROW Conditions	Road sections should be widened to a platform width of at least 8 m to support hardtop surfaces however providing a wider platform width to accommodate wider shoulder widths is recommended. Areas of encroachment of vegetation into the clear zone within the right-of-way should also be addressed before upgrading the surface type, to promote roadside safety. Any cost / benefit analysis should take into consideration the increased costs to mitigate such deficiencies.
6	Drainage	Any significant drainage deficiencies (i.e., flooding, saturated granular base, inadequate ditching, etc.), should be remedied before upgrading of the surface type. Any cost / benefit analysis should take into consideration the increased costs to mitigate such deficiencies.
7	Road Structure	The road section should be able to support a hardtop surface design (i.e., adequate base and subbase materials, absence of frost boils or soft spots, etc.). Detailed geotechnical investigations are recommended for areas where road structure may be a concern. Base strengthening should be completed before any upgrading of the surface type, where required. Any cost / benefit analysis should take into consideration the increased costs to mitigate such deficiencies.

It is expected that the pre-screening criteria, noted in Table 2, will provide a guide for the consideration of upgrading needs and costs at the project level. Therefore, each criterion should be assessed as part of the detailed design for such upgrading.

3.3 Gravel Road Upgrade Prioritization

Once a decision has been made to upgrade a gravel road to a hardtop surface, based on a detailed cost / benefit assessment and consideration of the factors noted in the pre-screening criteria, Burnside has developed a numerical formula to prioritize the candidate roads, contingent on the budget and Level of Service constraints set by the Township. The following Gravel Upgrading Priority Index (GUPI) has been developed to assist in such prioritization:

$$GUPI = TF + TVF + MF + DF$$

Where the factors are described as follows:

- GUPI is the Gravel Upgrade Priority Index, out of 100 points. The higher the GUPI, the higher the priority. Table 3 indicates how each GUPI relates to a road section’s upgrading priority. However, it should be noted that a road with an overall low GUPI does not indicate that the gravel road should not be a candidate for upgrading, but only reflects the relative priority of the section against other potential candidates for upgrading, within budget constraints.

Table 3: Gravel Upgrade Priority Index (GUPI) Ranges

Gravel Upgrade Priority Index (GUPI)	Upgrading Priority
0 – 49	Low
50 – 74	Medium
75 – 100	High

- TF is the Traffic Factor. The TF is based on a road section’s AADT range in vehicles per day (vpd). Table 4 indicates how a given road section’s TF corresponds to its AADT range.

Table 4: Traffic Factor (TF) Ranges

AADT Range (vpd)	Traffic Factor (TF)
0 – 99	0
100 – 199	15
200 – 399	30
400 and above	50

- TVF is the Truck Volume Factor. The TVF is based on the total average annual daily truck volume on a given road section. The traffic count data provided by the Township included breakdowns of classification which includes truck traffic. Based on the vehicle classification definitions contained in the *Verification, Refinement, and Applicability of Long-Term Pavement Performance Vehicle Classification Rules* (U.S. Department of Transportation Federal Highway Administration, November 2014), all vehicles in classification groups four to thirteen are considered trucks (i.e., motorcycles, passenger cars, and other two-axle four-tire single-unit vehicles are not considered trucks). Table 5 indicates how a given road section’s TVF corresponds to its truck volume range.

Table 5: Truck Volume Factor (TVF) Ranges

Truck Volume Range (vpd) ¹	Truck Volume Factor
0 – 5	0
6 – 9	5
10 – 19	10
20 – 49	15
50 and above	20

¹ Includes all vehicles other than passenger cars, motorcycles, and other two-axle for tire single unit vehicles. The truck volume applied should be based on AADT volumes.

- MF is the Maintenance Factor, which accounts for a road’s condition and maintenance needs, as well as the financial benefit that may be achieved as a result of eliminating the gravel road maintenance need. Based on input from Municipal staff, a gravel road section under consideration for upgrading should be classified as “high maintenance” if the road section’s surface has historically higher maintenance needs than other gravel roads in the Municipality. For the current study, it has been assumed that roads have normal maintenance requirements unless identified to be high maintenance by the Township staff. Note that this assessment should be based strictly on the maintenance of a gravel road surface and that the base condition of any gravel road should be sufficient to accommodate a hardtop surface. Table 6 summarizes how a given road section’s MF relates to its maintenance needs.

Table 6: Maintenance Factor (MF) Characteristics

Existing Surface Type	Maintenance Level	Characteristics	Maintenance Factor (MF)
Gravel	Normal	The road section has average maintenance needs.	0
	High	The road section has above-average maintenance needs, as confirmed by municipal staff (compared to other gravel roads in the Township). Examples of high-maintenance gravel roads include roads with above-average maintenance gravel needs, above-average grading needs and / or above-average dust suppressant needs.	15

- DF is the driveway factor, which accounts for the driveway access density on gravel road sections. Residential, commercial, institutional, and industrial driveways are included in this classification. Where the road provides access to built-up areas beyond the areas that immediately abut the road, or to commercial developments that require hardtop road access, such additional development is also included in the access density. Table 7 summarizes the DF that should be assigned to a given road section according to the driveway density per km.

Table 7: Driveway Factor (DF) Ranges

Number of Driveways per km	Driveway Factor (DF)
0 – 3	0
4 – 6	5
7 – 9	10
10 and above or commercial access	15

Potential gravel road upgrading projects can be sorted according to their GUPIs so that such projects may be incorporated within the Township’s capital improvement programs, subject to budget availability.

4.0 Consideration of Other Road Related Needs

In addition to the condition of roads, this study has considered several other road-related needs that may trigger certain improvement requirements for any particular road section. The other needs considered in this RNS include the following:

- Surface Type Needs – based on operational considerations (e.g., hardtop surfaces for urban and semi-urban areas, for sections with high truck traffic or for sections where AADT volumes justify such surfaces).
- Geometric Needs – including deficiencies in horizontal / vertical alignments or surface / platform widths.
- Drainage Needs – based on the frequency of flooding on the roadway or the adequacy of roadside drainage (such as ditching and brushing to support drying).
- Maintenance considerations.
- Coordination with other projects.

It is recommended that these factors be considered independently, rather than as a collective overall condition rating. The benefits of this approach include the following:

- Allows for a better integration into a pavement management system, where road distress condition will form the primary trigger for improvements.
- Provides clarity in establishing the time of needs, reason for improvement, and appropriate response.

The criteria associated with the above other road needs are based on the criteria outlined in the *Inventory Manual for Municipal Roads* (MTO, February 1991).

4.1 Road Surface Type Needs

Surface type should be appropriately designed to accommodate the volume of traffic and type of traffic, according to the MTO guidelines (*Inventory Manual for Municipal Roads*, Ministry of Transportation, 1991) and / or the Template for Life Cycle Road Improvements that has been developed for the Township in this RNS, as follows:

- Gravel roads are typically tolerable for low traffic volumes. The MTO *Inventory Manual* recommends an LCB surface for roads with AADT in the 200 to 399 range, with HCB surfaces over 400 AADT. The Township has historically upgraded gravel roads to LCB surfaces for roads that have AADT volumes exceeding 400 vpd, or at lesser volumes where other factors dictate (e.g., land use type and access considerations, truck traffic, hardtop road connectivity, etc.), within budget constraints. However, it should be noted that the Township has recently changed their practice of waiting until AADTs exceed 400 vpd and are now considering conversions at AADTs lower than 400 vpd, based on site-specific considerations.

Where roads have been established to a hardtop standard, for whatever reason, the Township has typically used LCB surfaces up to an AADT of 800 vpd and HCB surfaces for roads exceeding this AADT. The improvements recommended in this RNS are consistent with the Township's standard, providing HCB surfaces for any hardtop roads that require full depth removal of the hardtop surface, where AADTs exceed 800 vpd. For improvements requiring full depth replacement of the hardtop surface that have AADT volumes not exceeding 800 vpd, the surface type will continue to be the same as the existing (i.e., LCB replaced with LCB and HCB replaced with HCB).

The above surface type considerations are used as a guide to identify potential surface type needs. A review of the inventory data indicates there are a few roads in the Township that presently meet the criteria for consideration of surface type upgrading, as summarized in Table 8. Roads that are planned for upgrading should be reviewed at the detailed design stage, to ensure that the structural conditions and design conditions (i.e., widths, cross-section geometry, vertical and horizontal alignments, etc.) are conducive to such upgrading and / or whether additional work is required to achieve the upgrading. If additional work is required, the benchmark costs should be increased to account for any related upgrading required to support the updated surface type.

Table 8: Existing Surface Types that May Be Considered for Upgrading

Road	Road Length (km)	AADT (vpd)	Reason for Surface Need
Semi-Urban Gravel Roads			
Smith's Lane from McNab Street to Church Street East	0.12	25	Land use (Semi-Urban)
Union Street from Stover Street South to West End	0.09	10	Land use (Semi-Urban)
Cecilia Street from Base Line to End	0.18	30	Land use (Semi-Urban)
LCB Roads with AADT>800 and / or High Truck Percentage			
Mall Road from Middletown Line to Summerville Line	3.68	1395	Traffic Volume
Mall Road from Summerville Line to Highway 59	2.15	1137	Traffic Volume
Summerville Line from Coal Line to Potters Road	1.46	953	Traffic Volume
New Road from Base Line to Swimming Pool Road	1.15	692	Traffic Volume / Truck Percentage
Windham Line from Airport Road to Windham Road 2	0.92	635	Traffic Volume / Truck Percentage

Where the roads identified in Table 8 are scheduled for rehabilitation or reconstruction it is recommended that the surface type be upgraded as noted. While Union Street and Cecilia Street have been included in the table above for consideration, it is noted that the benefit received for providing a hardtop surface on these roads is not likely to outweigh the cost. Both of these roads are dead end roads with minimal access points provided along them.

4.2 Geometrics

4.2.1 Road Alignments

Road alignments were reviewed to determine the number of substandard horizontal / vertical curves and / or substandard gradients and / or substandard stopping sight distances (i.e., resulting from curves near driveway locations).

Deficient horizontal curves are defined as those which do not meet design speeds of 10 km per hour over posted speeds. However, the *Inventory Manual for Municipal Roads* (MTO, 1991) defines curves as tolerable when they meet design speeds of five to 15 km per hour below the posted speeds, assuming they have appropriate warning signs.

Vertical or horizontal grade and / or sightline were reviewed in the field during the field investigations. In general, the roads in the Township are relatively flat with sufficient sightlines on vertical and horizontal curves. Based on a review of the alignments along the gravel roads, no theoretical critical deficiencies were identified.

It is recommended that the Township continue to monitor traffic operations along areas of restricted sightlines, particularly at the following locations:

- sections that have the potential for higher speeds (e.g., existing hardtop roads or those roads proposed to be converted to hardtop)
- sections that have higher traffic volumes and / or experience significant non-local traffic
- sections that have a previous history of collisions

Improvements to alignments and / or enhanced warning signage should be reviewed as part of the detailed designs for any rehabilitation or reconstruction works.

4.2.2 Road Widths

The minimum gravel road surface widths (i.e., platform width, including shoulders) have been assessed according to criteria outlined in the *Geometric Guidelines for Municipal Roads* (Ontario Good Roads Association [OGRA], 1998). The recommended minimum platform width requirements for gravel roads are outlined below in Table 9.

Table 9: Recommended Minimum Platform Widths for Gravel Roads

Design Speed (km / h)	Minimum Platform Width for Varying AADT Traffic Volume Ranges (vpd)				
	<50	50 – 249	250 – 399	400 – 999	1,000 – 2,000
80	5.5 m	6.0 m	6.5 m	7.5 m	7.5 m
70				7.0 m	7.0 m
60				6.5 m	6.5 m
50				6.0 m	6.5 m
40				6.0 m	6.0 m

The gravel roads in the Township, that have been identified to have platform widths that currently do not meet the tolerable lower limit widths, are summarized in Table 10.

Table 10: Summary of Gravel Roads with Deficient Widths

ID	Road	Length (km)	AADT (vpd)	Speed (km/h)	Width (m)
077	Cecilia Street from Base Line to West End	0.18	30	80	5.0
066B	Ninth Road from Oatman Line to Middletown Line	2.66	40	80	5.0
144	Oatman Line from Ninth Road to Cornell Road	0.55	7	80	3.5
097A	Oriel Line from Curries Road to Gunn's Hill Road	1.29	18	80	4.2
097B	Oriel Line from Gunn's Hill Road to Substation Road	1.38	18	80	5.3
013A	Oxford Centre Road from Middletown Line to West End	0.84	13	80	4.7
062C	Oddy Road from Highway 59 to End	0.32	137	80	4.2

Many of the deficient road widths are located on roads with very low traffic volumes (i.e., less than 50 vpd) and / or low traffic speeds, and therefore may not be considered critical (i.e., not justifying widening to address the width deficiency alone in the short term). The tolerable lower limits may not allow for adequate emergency access (i.e., 6.0 m) and should be reviewed on a detailed level by the Township to determine if widening the road to meet emergency standards is critical in the short term. For the higher volume / higher speed roads, the magnitude of the width deficiencies is generally not that significant. However, consideration may be given to completing some widening of these roads as part of future maintenance work (i.e., maintenance gravel for gravel roads). While none of the road width deficiencies are considered critical in the short term, it is recommended that widths be upgraded to meet minimum recommended lower limit standards when, or if, such sections are rehabilitated or reconstructed to address condition needs.

4.3 Drainage

Historical and existing drainage issues (e.g., flooding, ponding) were identified based on discussions with Township staff. In general, the Township does not have a history of flooding on any of their roads.

The Township undertakes brushing as part of their regular maintenance practices (i.e., minimum once a year, with a second cut done as needed or as time allows), which assists in the drying of the roads.

The Township does not currently have a formal ditching program. Ditching is completed on an as-needed basis to respond to complaints or problems that are identified.

Where road works are proposed, it is recommended that additional investigations be completed to determine the requirements for drainage improvements. However, it is also recognized that the practicality of achieving sufficient drainage outlets may constrain the opportunities to improve roads in areas with drainage issues. Depending on traffic requirements in those areas, it may be more cost-effective to continue to undertake additional spring maintenance, on a yearly basis, to address such drainage issues.

4.4 Maintenance Considerations

Maintenance demands (e.g., low, average, high) may be one of the considerations in the decision to upgrade gravel surfaces to hardtop surfaces.

The Level of Service for maintenance of the Township's roads follows the Provincial Minimum Maintenance Standards (O. Reg. 239 / 02 as amended by O. Reg. 366 / 18). These regulations prescribe required monitoring of the roads and maintenance response requirements, based on the road's class. The road class is set by its Average Annual Daily Traffic and speed limit.

5.0 Gravel Road Needs

5.1 Review of Potential Road Surface Upgrades

Typically, the Township practice has been to upgrade gravel road sections with AADT volumes exceeding 400 vpd to a hardtop surface. The Township does not currently have any gravel roads that exceed this AADT. However, as described previously, although traffic volumes are an important factor to assess when considering roads that may warrant a surface-type upgrade, several other factors should be considered, including network connectivity / continuity, truck volumes and access requirements. Also, gravel road sections being upgraded to a hardtop surface must meet various criteria to ensure that the road can support a hardtop surface for an extended period, including ensuring that the road either meets or will be reconstructed to meet road structure, width, alignment, and drainage requirements.

To assess the Township's gravel roads for upgrading, Burnside has reviewed the gravel roads in the Township and completed analysis to determine which gravel roads may be considered for upgrading based on AADT, truck traffic and / or network connectivity. As noted above, it was found that the Township does not currently have any gravel roads with AADTs greater than 400 vpd. Therefore, no gravel roads are being proposed for upgrading based on AADT alone. However, there are 11 gravel roads that could provide extended hardtop connectivity and therefore could be considered for upgrading. The roads selected by Burnside for further analysis are summarized in Table 11.

It is recommended that the Township ensure that the correct surface type is chosen during the upgrade process (e.g., gravel segments adjacent to HCB segments would be preferred, and recommended, to be upgraded to HCB rather than LCB). Where more than one available surface type is available, the upgrade cost for both has been provided in Table 11.

All the roads identified for upgrading do provide benefits by improving the continuity and / or connectivity within the overall hard-top road network, thereby improving the Level of Service provided. In addition, the implementation of hardtop surfaces for these roads will attract additional traffic, raising the AADT volume served in these areas. Township roads which parallel County Roads may attract some traffic that would normally travel on the County network, which is a consideration. However, providing such roads will also facilitate hardtop detour routes, which may be required due to collisions or construction on the County Road network.

Table 11: Potential Gravel Road Upgrading

ID	Road	Length (km)	AADT (vpd)	Estimated Upgrade Cost (\$)	Gravel Upgrade Priority Index (GUPI)	Comments
033A	Beaconsfield Road from Highway 59 to 299 m east of Middletown Line	3.33	128	HCB – \$1,049,028 LCB – \$579,726	30	Would provide hardtop connectivity between Highway 59 and Middletown Line. This segment also connects to hardtop roads west of 59, which continue beyond the Township boundary.
104B.2	Zenda Line from Quaker Street to 514 m north of Quaker Street	0.51	121	HCB – \$162,108 LCB – \$89,586	25	If segment 036 is not upgraded, this segment is recommended to provide hardtop connectivity to the residential properties located to the north. This segment is the preferred upgrade as there is an existing east-west hardtop road south of this segment (Quaker Street).
104A.2	Zenda Line from 672 m south of Evergreen Street to Evergreen Street	0.67	121	HCB – \$211,964 LCB – \$117,138	25	Should be upgraded in conjunction with 036 to provide hardtop connectivity for residential properties.
026	Substation Road from Cedar Line to Highway 59	1.79	85	LCB – \$331,170	20	Township noted this could be a good candidate for connectivity purposes. Noted that this segment has not had a maintenance intensive history which would accommodate upgrading.
036	Evergreen Street from Zenda Line to Oxford Road 13	3.73	85	LCB – \$563,367	15	Would provide hardtop connectivity from Oxford Road 14 to the west boundary road. Upgraded together with segment 104A.2 will provide hardtop connectivity for the residential properties to the south.

ID	Road	Length (km)	AADT (vpd)	Estimated Upgrade Cost (\$)	Gravel Upgrade Priority Index (GUPI)	Comments
016B	Old Stage Road from 480 m east of Middletown Line to Old 14 Line	3.16	83	HCB – \$935,446 LCB – \$516,957	15	Would provide hardtop connectivity with the rest of Old Stage Road, providing a continuous east-west hardtop road from Sweaburg Road to Oxford Road 14.
274	Smith's Lane from McNab Street to Church Street East	0.12	25	HCB – \$28,462	15	Located in the village of Burgessville, semi-urban roadside environment with residential properties.
049	Pleasant Valley Road from Zenda Line to Middletown Line	3.74	94	HCB – \$1,135,744 LCB – \$627,648	10	Would provide hardtop connectivity to the Township boundary. This would allow for a complete hardtop road across the Township.
027	Substation Road from Highway 59 to Middletown Line	3.65	84	LCB – \$575,505	5	Township noted some geotechnical work and / or full load conversion planned for the west portion from Middletown Line to provide access for an existing cattle company.
142	Pleasant Valley Road from east of Zenda Line (dog leg) to Pleasant Valley Road	0.23	64	HCB – \$70,832 LCB – \$39,144	0	Should be upgraded if segment 049 is upgraded, for hardtop connectivity purposes.
047	Quaker Street from Slant Road to Base Line	3.05	42	HCB – \$1,007,684 LCB – \$556,878	0	Would provide hardtop connectivity from Slant Road to Base Line. Could also be used as a bypass around the village of Norwich
021A.1	Curries Road from Oxford Road 14 to Vandecar Line	1.38	41	LCB – \$214,599	0	Would provide hardtop connectivity providing a continuous east-west hardtop road

ID	Road	Length (km)	AADT (vpd)	Estimated Upgrade Cost (\$)	Gravel Upgrade Priority Index (GUPI)	Comments
021A.2	Curries Road from Vandecar Line to Muir Line	2.49	41	LCB – \$386,799	0	Would provide hardtop connectivity providing a continuous east-west hardtop road

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As outlined above and summarized in Table 11, there are 11 gravel road segments that could be upgraded to a hardtop surface to provide improved hardtop connectivity. However, these roads are considered to have a “low” GUPI value, indicating that upgrading to address traffic volumes, truck volumes, maintenance requirements and drainage needs may not be priorities if budgets are limited.

Burnside has developed a 10-year gravel road upgrading plan based on the roads that are recommended for upgrading in the table above. The gravel road upgrading plan can be found on the spreadsheet and map in Appendix B of this memo. The development of the gravel road upgrading plan has been based on the GUPI introduced in Section 3.3 of this memo. It should be noted that due to practical considerations and network needs, the upgrades recommended can be completed over seven years instead of ten, assuming that the Township is able to designate the required budget. The total cost of the upgrading plan is \$3,922,219.00 which will convert a total of 23.53 km of gravel roads to hardtop surfaces. The priority and timing of upgrading the roads identified in the plan is considered to be flexible to meet budget demands as the timing is warranted based on improving the level of service rather than being required due to road conditions.

5.2 Condition Related Needs

A total of approximately 153.43 km of gravel roads were reviewed in March 2024. Gravel road improvement needs were assessed based on the criteria outlined above. Gravel road improvement needs types and costs (including upgrading where considered) are summarized in Table 12. The preventive maintenance costs in the table include the supply of maintenance gravel (i.e., every four years) but exclude routine maintenance (i.e., grading and dust suppressants).

Table 12: Township of Norwich Gravel Road Needs

Improvement Need Type	Quantification of Gravel Road Needs		
	Estimated Cost (\$)	Length (km)	Percentage of Total Length
Preventive Maintenance	\$1,044,726	126.15	82.22 %
Resurface (Upgrade to Hardtop)	\$4,523,617	27.28	17.78 %
Total	\$5,568,343	153.43	100.00 %

As shown in Table 12, the estimated total cost of gravel road needs in the Township is over \$5.0M. This equates to an overall average need of approximately \$36,292 per km of existing gravel roads (i.e., 153.43 km of gravel roads). The preventive maintenance improvements are included in the primary ten-year improvement plan outlined in this road needs study, while the upgrade of surface type is not included in the primary plan, but is considered to be additional work, subject to budget allocations by Council to support such improvements to the Level of Service in the overall road network.

The road improvement needs for the Township's network (hardtop and gravel) are included in Appendix A of this memo, which is Appendix E of the draft version of the full road needs study report.

5.3 Spot Improvement Needs

The condition ratings developed as part of this study are based on the field review completed with Township staff which considers deficiencies that are experienced throughout a given road segment. Therefore, the condition-related needs are identified for the overall road segment rather than isolated areas that require additional maintenance and / or are prone to road user complaints.

Localized spot improvement needs such as removing high shoulders (grass edge), ditching, brushing, additional gravel, base strengthening, etc., may exist that are not specifically identified in the condition rating but should be captured in the local knowledge provided by the Township during the field reviews or the Township's ongoing monitoring for compliance with Minimum Maintenance Standard requirements. Based on the field review work completed with Township staff, it is Burnside's understanding that the Township completes maintenance items such as removing high shoulders and restoring the crown in the road prior to applying maintenance gravel. Implementing localized spot improvements is recommended to maintain the Township's roads at a reasonable level of service and / or to reduce the maintenance effort requirements for certain areas / road segments. Table 13 below summarizes the roads that have been identified as having spot improvement needs.

Table 13: Localized Spot Improvement Needs

Road ID	Road Segment	Road Length (km)	AADT (vpd)	Spot Improvement Comments
036	Evergreen Street from Zenda Line to Oxford Road 13	3.73	85	Township staff noted that the portion of this road that runs through the bush area is prone to heavy spring breakup and may need base strengthening.
093A	Cedar Line from 426 m north of Curries Road to Sweaburg Road	1.58	75	Township staff noted that this segment typically experiences heavy spring breakup and is very rough and mushy during the freeze / thaw period. The Township also noted a moderate to high truck presence on this road.
093B	Cedar Line from 426 m north of Curries Road to Curries Road	0.43	176	Township staff noted that this segment typically experiences heavy spring breakup and is very rough and mushy during the freeze / thaw period. The Township also noted a moderate to high truck presence on this road.
021A.1	Curries Road from Oxford Road 14 to Vandecar Line	1.38	41	Township staff noted this segment is typically maintenance intensive during the spring and has a history of road user complaints during this period.
021A.2	Curries Road from Vandecar Line to Muir Line	2.49	41	Township staff noted this segment is typically maintenance intensive during the spring and has a history of road user complaints during this period.
136	Neidert Line from Potters Road to Middletown Line	2.34	16	The sandy portion of this segment was quite broken up and required maintenance at the time of the fieldwork.
028A	Substation Road from Middletown Line to Oriel Line	2.12	60	Township staff noted this segment is typically maintenance intensive during the spring and has a history of road user complaints during this period.

While the road segments identified in the table above should be considered for localized spot improvements, it should be noted that these are not the only localized areas that may require additional improvements. Therefore, it is recommended that the Township develop a spot improvement program and / or allocate an annual budget for spot improvements. Budgets for spot improvement can be determined at the detailed design stage, which is beyond the scope of this current planning-level, road needs study. The Township should also continue to monitor

their roads for additional spot improvement needs based on maintenance efforts, complaints, road drainage issues, etc.

6.0 Conclusions and Recommendations

Based on the analysis / review completed, the primary conclusions and recommendations made in this RNS, as they pertain to gravel roads, are as follows:

- Approximately 61.95% of all existing gravel roads in the Township are in good condition, about 37.02% in satisfactory condition and about 1.02% in fair condition. Most of the Township's gravel roads do not experience conditions that would justify upgrading to hardtop surface, based on their usage and the Level of Service they are intended to provide (i.e., local access in rural areas). Considering the relatively low traffic volumes on the Township's gravel roads, traffic counts alone do not justify conversion of gravel roads to hardtop surfaces. In addition, the financial impact of maintaining low volume rural roads as gravel surfaces, has been calculated to be significantly lower than upgrading and maintaining such roads as hardtop roads over the life cycle of such roads. However, the Township may consider upgrading some gravel roads to improve the hardtop road connectivity in the overall road network and/or to improve the Level of Service to semi-urban areas.
- The primary ten-year capital improvement plan in this RNS provides for the management of the life cycle needs of the overall existing road network, to preserve and protect the investments that have been made in these roads. Allocation of budgets to improving the Level of Service of the gravel roads and/or to improve hardtop connectivity within the road network, is considered to be additional to the primary plan, contingent upon Council's direction. If budget allocation becomes available to upgrade gravel roads to hardtop surfaces, Burnside developed a Gravel Upgrade Priority Index (GUPI) to prioritize such surface type improvements.
- The GUPI values for each gravel road segment are contained in Table 11 for guidance to the Township in developing a plan for gravel surface upgrades over the ten-year horizon period, contingent on budget allocation becoming available for such upgrades. Eleven roads were identified for potential surface upgrading (see Table 11), based on road connectivity considerations, and three roads were identified for potential surface upgrades (see Table 8) to serve semi-urban areas while only one of those roads is recommended for upgrade due to cost / benefit.
- Burnside identified pre-screening criteria for the upgrading of gravel road surfaces to hardtop surfaces (see Table 2). These pre-screening criteria may be used to provide context of the needs for upgrading and for further consideration of the detailed upgrading designs and costs.
- If the Township decides to upgrade gravel roads to hardtop surfaces it is recommended that improvements to the surface gravel, road base, ditching and culverts be completed a year in advance of placement of the hardtop surface, to allow for settlements to occur.
- It is recommended that all new, or existing LCB roads have SST applied every five to seven years, considering the degradation of this surface type.

- Gravel road sections with the following issues / deficiencies have also been identified in this RNS, for further consideration of implementing improvements on roads that are proposed for rehabilitation or reconstruction:
 - deficient horizontal / vertical curves or deficient sightlines.
 - less than tolerable (i.e., deficient) road widths.
 - drainage issues/deficiencies.
 - high (i.e., above-average) maintenance demands.
- The estimated total cost of gravel road improvement / maintenance needs in the Township is approximately \$5,568,343. This equates to an overall average of approximately \$36,292 per km of existing gravel roads (i.e., 153.43 km)
- It is recommended that the Township develop a spot improvement program / budget to address localized deficiencies on the gravel roads, at the detailed design stage for such work.

Burnside gratefully acknowledges the assistance and contributions of Township staff in the preparation of this study.

R.J. Burnside & Associates Limited

Ethan McCaw
Transportation Planner
EM:cr/cvh

Henry Centen, P.Eng.
Senior Engineer - Transportation

Enclosures: Appendix A – Road Improvement Needs (Map and Table)
 Appendix B – 10-year Gravel Road Upgrading Plan



BURNSIDE

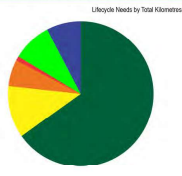
[THE DIFFERENCE IS OUR PEOPLE]



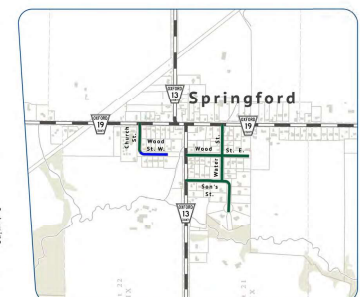
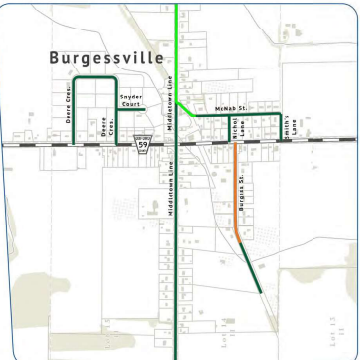
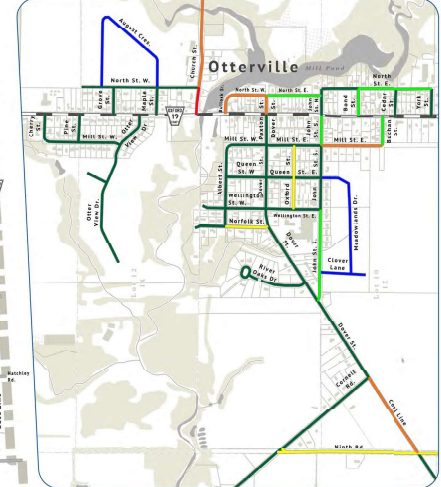
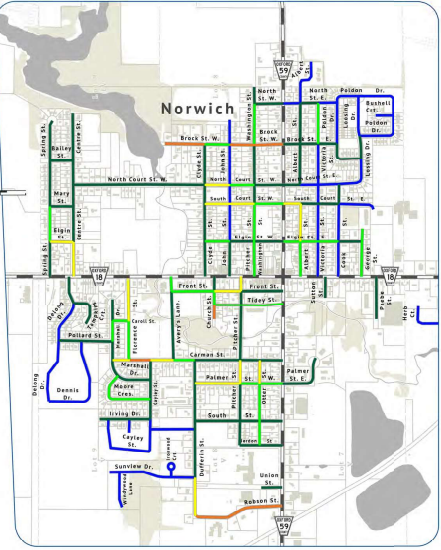
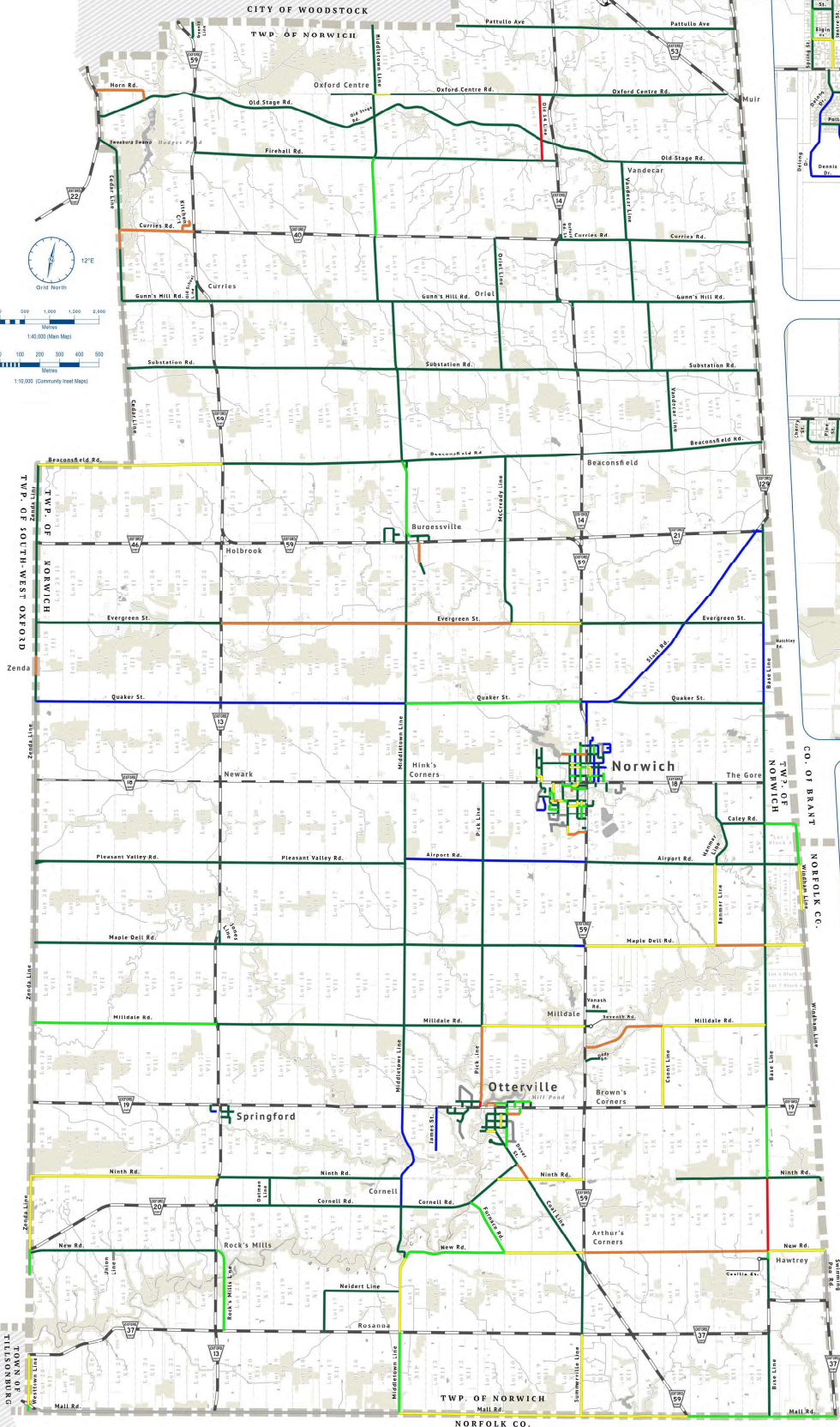
Appendix A

Road Improvement Needs (Map and Table)

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- Routine Maintenance 85.1% (227.7)
- Rehabilitation 11.8% (29.5)
- Resurfacing 5.2% (12.1)
- Preventive Maintenance 6.7% (16.3)
- No Maintenance Required 7.6% (19.7)



- Proposed Lifecycle Improvement
 - Reconstruction
 - Rehabilitation
 - Resurfacing
 - Preventive Maintenance
 - Routine Maintenance
 - No Maintenance Required
- Municipal Road
- Maintained by Adjacent Municipality
- Non-Municipal Roads
 - Oxford County Road
 - Provincial Highway
 - Rail Line

Drawn: North American 0302 0205
Checked: North American 0302 0205
Project: Township of Norwich
Client: Township of Norwich
Project: Roads Needs Study 2023
Project Number: 2023-001
Date: 2023/04/19

Drawn: JAC
Checked: JAC
Client: Township of Norwich
Project: Roads Needs Study 2023
Project Number: 2023-001
Date: 2023/04/19

Appendix E - Road Improvement Needs

Municipal ID	Asset or PSAB ID	Community	Name	Name From	Name To	Surface Material	Capital Maint. %	Boundary Road	Road Length (m)	Road Width (m)	Platform Width (m)	Surface Area (m ²)
133B	67	Norwich (Township)	Base Line	Ninth Rd.	New Rd.	High Class Bituminous	100	No	1468	6.8	8.8	9982
252A	2613	Norwich (Township)	Church St.	North St. W.	Main St. W.	High Class Bituminous	100	No	116	7.6	7.6	882
092A	331	Norwich (Township)	Old 14 Line	Oxford Centre Rd.	Old Stage Rd.	High Class Bituminous	100	No	910	4.3	4.3	3913
092B	332	Norwich (Township)	Old 14 Line	Oxford Centre Rd.	Firehall Rd.	High Class Bituminous	100	No	408	4.3	4.3	1754
279B	210	Norwich (Township)	John St. (Eastwood)	East End	West End	High Class Bituminous	100	No	265	6.2	6.2	1643
021B	145	Norwich (Township)	Curries Rd.	Cedar Line	Oxford Rd. 59	High Class Bituminous	100	No	1510	6.5	7.5	9815
201A.3	94	Norwich	Brock St. W.	John St.	Washington St.	High Class Bituminous	100	No	106	6.5	6.5	689
273C.1	98	Burgessville	Burgess St.	Church St. E.	440m S. of Church St. E.	High Class Bituminous	100	No	438	6.6	6.6	2891
279A	2569	Norwich (Township)	Main St. (Eastwood)	Highway 2	John St	High Class Bituminous	100	No	98	6	6	588
078A	2604	Norwich (Township)	Mall Rd.	Westtown Line	Oxford Rd. 51	Low Class Bituminous	50	Yes	181	8.1	8.1	1466
201B	93	Norwich	Brock St. W.	Washington St.	Stover St. N.	High Class Bituminous	100	No	126	6.5	6.5	819
123A	2612	Norwich (Township)	Pick Line	Milldale Rd.	Church St.	Low Class Bituminous	100	No	1375	6.5	6.5	8938
038A	2584	Norwich (Township)	Evergreen St.	Middletown Line	McCready Line	Low Class Bituminous	100	No	2127	6.7	6.7	14251
201A.1	92	Norwich	Brock St. W.	Clyde St.	End	High Class Bituminous	100	No	173	6.5	6.5	1125
21C	2736	Norwich (Township)	Kitchen Crt	Curries Rd.	End	High Class Bituminous	100	No	345	7.4	7.4	2553
132A.1	2740	Norwich (Township)	Coal Line	Cornell Rd.	Ninth Rd.	Low Class Bituminous	100	No	392	6.5	7.5	2548
253B	320	Otterville	North St. W.	Paxton St.	Bullock St.	High Class Bituminous	100	No	168	6.4	6.4	1075
037	2582	Norwich (Township)	Evergreen St.	Oxford Rd. 13	Middletown Line	Low Class Bituminous	100	No	3734	6.6	6.6	24644
121	2554	Norwich (Township)	Windham Line	Maple Dell Rd.	Oxford Rd. 19	Low Class Bituminous	50	Yes	3261	6.8	6.8	22175
096A.1	113	Norwich (Township)	Cedar Line	Rivers Rd.	Curries Rd.	High Class Bituminous	50	Yes	391	6.5	7.5	2542
063A	2597	Norwich (Township)	Milldale Rd.	Highway 59	Csont Line	Low Class Bituminous	100	No	1709	6.3	6.3	10767
123B		Otterville	Church St.	North St. W.	Pick Line	High Class Bituminous	100	No	157	7.6	7.6	1193
008	203	Norwich (Township)	Horn Rd.	Sweaburg Rd. (Oxford Rd 12)	Old Stage Rd.	Low Class Bituminous	100	No	1167	6.8	6.8	7936
254A	2630	Otterville	Paxton St.	North St.	Main St.	High Class Bituminous	100	No	78	7.5	7.5	585
219	385	Norwich	Robson St.	Dufferin St.	Stover St. S.	High Class Bituminous	100	No	384	6.6	6.6	2534
104B.1	2608	Norwich (Township)	Zenda Line	514m N. of Quaker St.	672m S. of Evergreen St.	High Class Bituminous	50	Yes	403	6.7	6.7	2700
057B	2594	Norwich (Township)	Maple Dell Rd.	Hammer Line	Base Line	Low Class Bituminous	100	No	1002	6.4	6.4	6413
263A	268	Otterville	Mill St. E.	John St. S.	Buchan St.	High Class Bituminous	100	No	265	6.3	6.3	1670
253A	317	Otterville	Bullock St.	Main St. W.	North St. W.	High Class Bituminous	100	No	72	6.2	6.2	446
214C.2	105	Norwich	Carman St.	Florence St.	Cayley St.	High Class Bituminous	100	No	89	8.8	8.8	783
213B	124	Norwich	Church St.	Tidey St.	End	High Class Bituminous	100	No	60	7.2	7.2	432
075	290	Norwich (Township)	New Rd.	Highway 59	Base Line	Low Class Bituminous	100	No	3712	6.6	6.6	24499
064	2598	Norwich (Township)	Ninth Rd.	Zenda Line	Oxford Rd. 13	Low Class Bituminous	100	No	3788	6.2	6.2	23486
206A	401	Norwich	South Court St. W.	Clyde St.	John St.	High Class Bituminous	100	No	109	6.2	6.2	676
101	2607	Norwich (Township)	Zenda Line	Beaconsfield Rd.	Salford Rd.	Gravel	50	Yes	1560	6.8	7.8	12168
038B	2583	Norwich (Township)	Evergreen St.	McCready Line	Oxford Rd. 59	High Class Bituminous	100	No	1417	6.4	6.4	9069
212B	182	Norwich	Front St.	Church St.	Pitcher St.	High Class Bituminous	100	No	115	6.2	6.2	713
057C	2592	Norwich (Township)	Maple Dell Rd.	Base Line	Windham Line	Low Class Bituminous	100	No	792	6.7	6.7	5306
067A	299	Norwich (Township)	Ninth Rd.	Cornell Rd.	Coal Line	Low Class Bituminous	100	No	639	6.5	6.5	4154
239A	59	Norwich	Albert St.	South Court St. E.	Elgin St. E.	High Class Bituminous	100	No	168	6.8	6.8	1142
214C.3	106	Norwich	Carman St.	Cayley St.	Avery's Lane	High Class Bituminous	100	No	99	8.8	8.8	871
083	223	Norwich (Township)	Mall Rd.	Summerville Line	Hwy 59	Low Class Bituminous	50	Yes	2146	7.1	8.7	15237

Appendix E - Road Improvement Needs

Municipal ID	Roadside Environment	AADT Range	AADT	AADT Method	AADT Year	Ride Comfort Rating (RCR)	Structural Adequacy (1-20)	Drainage Deficiency Rating (1-10)	PCI / GCR	Condition Rating Class	Priority Guide Number (PGN)	Priority Rating (PR)	Proposed Lifecycle Improvement
133B	Rural	1000-1999	1111	Actual Count	2023	5	8	9	27	Very Poor Condition	229	85.04	Reconstruction
252A	Urban	200-499	225	Estimate	N/A	5	15	10	32	Very Poor Condition	25.5	54.87	Reconstruction
092A	Rural	0-49	19	Estimate	N/A	6	17	12	38	Very Poor Condition	5.1	34.37	Reconstruction
092B	Rural	0-49	19	Estimate	N/A	6	17	12	38	Very Poor Condition	5.1	34.37	Reconstruction
279B	Semi-Urban	50-199	50	Estimate	N/A	5	16	13	39	Very Poor Condition	9.4	37.58	Reconstruction
021B	Rural	200-499	307	Estimate	N/A	5	17	13	43	Poor Condition	98.5	49.2	Rehabilitation
201A.3	Semi-Urban	200-499	250	Estimate	N/A	6	16	13	45	Poor Condition	77.4	45.39	Rehabilitation
273C.1	Semi-Urban	50-199	100	Estimate	N/A	9	19	15	48	Poor Condition	28.8	35.77	Rehabilitation
279A	Semi-Urban	50-199	75	Estimate	N/A	7	16	13	49	Poor Condition	23.2	33.4	Rehabilitation
078A	Rural	1000-1999	1874	Estimate	N/A	7	16	12	51	Poor Condition	669.9	64.82	Rehabilitation
201B	Semi-Urban	200-499	300	Estimate	N/A	7	17	13	52	Poor Condition	81	41.22	Rehabilitation
123A	Rural	200-499	200	Actual Count	2023	6	20	15	54	Poor Condition	83.5	36.21	Rehabilitation
038A	Rural	200-499	200	Actual Count	2023	7	20	15	56	Fair Condition	77.4	34.64	Rehabilitation
201A.1	Semi-Urban	0-49	25	Estimate	N/A	7	17	15	57	Fair Condition	6	24.42	Rehabilitation
21C	Semi-Urban	0-49	10	Estimate	N/A	7	18	14	57	Fair Condition	2.1	22.87	Rehabilitation
132A.1	Rural	500-999	660	Actual Count	2023	9	19	14	58	Fair Condition	252	43.21	Rehabilitation
253B	Semi-Urban	50-199	150	Estimate	N/A	6	18	14	58	Fair Condition	35.9	31.19	Rehabilitation
037	Rural	50-199	143	Actual Count	2023	9	20	15	59	Fair Condition	52.3	30.16	Rehabilitation
121	Rural	500-999	504	Estimate	N/A	9	19	14	59	Fair Condition	179.4	39.6	Rehabilitation
096A.1	Rural	50-199	76	Actual Count	2023	6	17	13	60	Fair Condition	17	26.25	Rehabilitation
063A	Rural	50-199	137	Actual Count	2023	9	20	15	60	Fair Condition	51.3	29.18	Rehabilitation
123B	Semi-Urban	200-499	200	Actual Count	2023	7	15	12	61	Fair Condition	37.5	30.7	Rehabilitation
008	Rural	50-199	136	Actual Count	2022	7	17	13	61	Fair Condition	46.1	28.41	Rehabilitation
254A	Urban	50-199	150	Estimate	N/A	7	16	14	61	Fair Condition	18.1	28.96	Rehabilitation
219	Semi-Urban	200-499	350	Estimate	N/A	7	17	12	62	Fair Condition	73.7	33.77	Rehabilitation
104B.1	Rural	50-199	121	Actual Count	2023	7	18	15	62	Fair Condition	25	27.07	Rehabilitation
057B	Rural	50-199	165	Actual Count	2023	9	20	15	63	Fair Condition	56.3	28	Rehabilitation
263A	Semi-Urban	50-199	100	Estimate	N/A	7	16	13	63	Fair Condition	21.4	25.45	Rehabilitation
253A	Semi-Urban	50-199	150	Estimate	N/A	8	16	13	64	Fair Condition	31.8	26.73	Rehabilitation
214C.2	Semi-Urban	200-499	350	Estimate	N/A	8	17	14	64	Fair Condition	52.3	32	Rehabilitation
213B	Semi-Urban	0-49	25	Estimate	N/A	8	17	13	64	Fair Condition	4.5	20.44	Rehabilitation
075	Rural	200-499	293	Actual Count	2023	8	19	14	64	Fair Condition	94.3	30.76	Rehabilitation
064	Rural	50-199	78	Actual Count	2023	8	20	15	65	Fair Condition	12.7	23.07	Resurface
206A	Semi-Urban	200-499	250	Estimate	N/A	8	18	14	65	Fair Condition	21.1	28.89	Resurface
101	Rural	50-199	178	Actual Count	2023	7	12	11	65	Fair Condition	0	19.98	Preventive Maintenance
038B	Rural	200-499	200	Actual Count	2023	6	18	15	66	Fair Condition	15.9	26.76	Resurface
212B	Semi-Urban	50-199	100	Estimate	N/A	7	16	11	66	Fair Condition	8.2	23.39	Resurface
057C	Rural	50-199	165	Actual Count	2023	9	20	15	66	Fair Condition	24.1	25.73	Resurface
067A	Rural	200-499	405	Actual Count	2022	8	19	14	66	Fair Condition	61	31.23	Resurface
239A	Semi-Urban	200-499	250	Estimate	N/A	8	18	13	67	Fair Condition	18.2	27.24	Resurface
214C.3	Semi-Urban	200-499	350	Estimate	N/A	8	17	14	67	Fair Condition	19.7	29.33	Resurface
083	Rural	1000-1999	1137	Actual Count	2023	7	19	14	67	Fair Condition	152.2	38.66	Resurface

Appendix E - Road Improvement Needs

Municipal ID	Proposed Improvement Type	Improvement Cost	Base Cost (m ²)	Condition Comments
133B	Full Depth Removal + 1 HMA (75mm) + Total Base Replacement	\$798,560.00	\$80.00	
252A	Full Depth Asphalt Removal + 2 HMA (50mm each) + Total Base and Curb Replacement + Nominal Storm Sewer Adjustment	\$106,722.00	\$121.00	
092A	Full Depth Removal + 1 HMA (75mm) + Total Base Replacement	\$313,040.00	\$80.00	Start of the segment is gravel, then asphalt. Basically a private laneway
092B	Full Depth Removal + 1 HMA (75mm) + Total Base Replacement	\$140,320.00	\$80.00	Start of the segment is gravel, then asphalt. Basically a private laneway
279B	Full Depth Removal + 1 HMA (75mm) + Total Base Replacement + Nominal Shoulder Repair	\$131,440.00	\$80.00	Very poor condition, no drainage and no cul-de-sac
021B	Pulverize + Granular A + 1 HMA (75mm) + Nominal Shoulder Repair	\$412,230.00	\$42.00	
201A.3	Pulverize + Granular A + 1 HMA (75mm) + Nominal Shoulder Repair	\$28,938.00	\$42.00	Lots of alligator cracking as well as pothole and edge patches
273C.1	Pulverize + Granular A + 1 HMA (75mm) + Nominal Shoulder Repair	\$121,422.00	\$42.00	
279A	Pulverize + Granular A + 1 HMA (75mm) + Nominal Shoulder Repair	\$24,696.00	\$42.00	
078A	Pulverize + Granular A + DST	\$19,058.00	\$26.00	
201B	Pulverize + Granular A + 1 HMA (75mm) + Nominal Shoulder Repair	\$34,398.00	\$42.00	Lots of alligator cracking as well as pothole and edge patches
123A	Pulverize + Granular A + DST	\$232,388.00	\$26.00	LCB surface with lots of patching completed
038A	Pulverize + Granular A + DST	\$370,526.00	\$26.00	
201A.1	Pulverize + Granular A + 1 HMA (75mm) + Nominal Shoulder Repair	\$47,250.00	\$42.00	Heavy alligator cracking and lots of patched potholes
21C	Pulverize + Granular A + 1 HMA (75mm) + Nominal Shoulder Repair	\$107,226.00	\$42.00	
132A.1	Pulverize + Granular A + DST	\$66,248.00	\$26.00	
253B	Pulverize + Granular A + 1 HMA (75mm) + Nominal Shoulder Repair	\$45,150.00	\$42.00	
037	Pulverize + Granular A + DST	\$640,744.00	\$26.00	
121	Pulverize + Granular A + DST	\$288,275.00	\$26.00	
096A.1	Pulverize + Granular A + 1 HMA (75mm) + Nominal Shoulder Repair	\$53,382.00	\$42.00	
063A	Pulverize + Granular A + DST	\$279,942.00	\$26.00	Township noted this segment is maintenance intensive for cold patch
123B	Pulverize + Granular A + 1 HMA (75mm) + Nominal Shoulder Repair	\$50,106.00	\$42.00	
008	Pulverize + Granular A + DST	\$206,336.00	\$26.00	FibreMat and Surface Treatment to be installed this year (2023)
254A	Full Depth Removal + 2 HMA (50 mm each) + Spot Curb Replacement + Nominal Storm Sewer Adjustments	\$38,610.00	\$66.00	
219	Pulverize + Granular A + 1 HMA (75mm) + Nominal Shoulder Repair	\$106,428.00	\$42.00	
104B.1	Pulverize + Granular A + 1 HMA (75mm) + Nominal Shoulder Repair	\$56,700.00	\$42.00	
057B	Pulverize + Granular A + DST	\$166,738.00	\$26.00	
263A	Pulverize + Granular A + 1 HMA (75mm) + Nominal Shoulder Repair	\$70,140.00	\$42.00	
253A	Pulverize + Granular A + 1 HMA (75mm) + Nominal Shoulder Repair	\$18,732.00	\$42.00	
214C.2	Pulverize + Granular A + 1 HMA (75mm) + Nominal Shoulder Repair	\$32,886.00	\$42.00	
213B	Pulverize + Granular A + 1 HMA (75mm) + Nominal Shoulder Repair	\$18,144.00	\$42.00	
075	Pulverize + Granular A + DST	\$636,974.00	\$26.00	Township noted this is the most heavily patched road
064	Single Surface Treatment	\$305,318.00	\$13.00	Township noted this segment is maintenance intensive for potholes and patching
206A	1 HMA (50mm) Overlay + Patching + Nominal Shoulder/Ditch Repair	\$16,900.00	\$25.00	
101	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$12,168.00	\$1.00	
038B	1 HMA (50mm) Overlay + Patching + Nominal Shoulder/Ditch Repair	\$226,725.00	\$25.00	
212B	1 HMA (50mm) Overlay + Patching + Nominal Shoulder/Ditch Repair	\$17,825.00	\$25.00	
057C	Single Surface Treatment	\$68,978.00	\$13.00	
067A	Single Surface Treatment	\$54,002.00	\$13.00	
239A	1 HMA (50mm) Overlay + Patching + Nominal Shoulder/Ditch Repair	\$28,550.00	\$25.00	
214C.3	1 HMA (50mm) Overlay + Patching + Nominal Shoulder/Ditch Repair	\$21,775.00	\$25.00	
083	Single Surface Treatment	\$99,041.00	\$13.00	Some gullies present that require ditching

Appendix E - Road Improvement Needs

Municipal ID	Asset or PSAB ID	Community	Name	Name From	Name To	Surface Material	Capital Maint. %	Boundary Road	Road Length (m)	Road Width (m)	Platform Width (m)	Surface Area (m ²)
032	82	Norwich (Township)	Beaconsfield Rd.	Cedar Line	Hwy 59	High Class Bituminous	100	No	1819	7.4	8.4	13461
220D	159	Norwich	Dufferin St.	Sunview Dr.	Robson St.	High Class Bituminous	100	No	167	6.6	6.6	1102
067B	297	Norwich (Township)	Ninth Rd.	Coal Line	Highway 59	Low Class Bituminous	100	No	1135	5.9	5.9	6697
031A	83	Norwich (Township)	Beaconsfield Rd.	Zenda Line	Trillium Line	High Class Bituminous	50	Yes	1480	7.4	8.4	10952
225A	179	Norwich	Florence St.	Main St. W.	Caroll St.	High Class Bituminous	100	No	184	6.8	6.8	1251
063B	277	Norwich (Township)	Milldale Rd.	Csont Line	Base Line	Low Class Bituminous	100	No	2080	6.5	6.5	13520
128A	2615	Norwich (Township)	Zenda Line	Cornell Rd.	Ninth Rd.	High Class Bituminous	50	Yes	1467	7.5	7.5	11003
124	143	Norwich (Township)	Csont Line	Milldale Rd.	Otterville Rd. (Oxford Rd. 19)	Low Class Bituminous	100	No	1623	6.5	6.5	10550
021A.1	144	Norwich (Township)	Curries Rd.	Oxford Rd. 14	Vandecar Line	Gravel	100	No	1381	6.4	7.4	10219
021A.2	146	Norwich (Township)	Curries Rd.	Vandecar Line	Muir Line	Gravel	100	No	2489	6.4	7.4	18419
078B	2604	Norwich (Township)	Mall Rd.	Oxford Rd. 51	Jackson Sideroad	Low Class Bituminous	50	Yes	1282	7.3	7.3	9359
057A	2593	Norwich (Township)	Maple Dell Rd.	Highway 59	Hammer Line	Low Class Bituminous	100	No	2627	6.4	6.4	16813
076	2603	Norwich (Township)	New Rd.	Base Line	Swimming Pool Rd.	Low Class Bituminous	100	No	1152	6.7	6.7	7718
013B	348	Norwich (Township)	Oxford Centre Rd.	23m W. of Middletown Line	300m E. of Middletown Line	High Class Bituminous	100	No	367	6.6	7.6	2422
222E	373	Norwich	Pitcher St.	Main St. W.	Front St.	High Class Bituminous	100	No	64	7.3	7.3	467
085	419	Norwich (Township)	Summerville Line	Potters Rd.	Mall Rd.	Low Class Bituminous	100	No	1636	6.7	6.7	10961
140A	449	Norwich (Township)	Westtown Line	Potters Rd.	Oxford Rd. 51	Low Class Bituminous	50	Yes	1013	6.6	6.6	6686
031B	84	Norwich (Township)	Beaconsfield Rd.	Trillium Line	Cedar Line	High Class Bituminous	50	Yes	419	7.4	8.95	3101
209	162	Norwich	Elgin St.	Spring St.	Centre St.	High Class Bituminous	100	No	102	6.5	6.5	663
223A	344	Norwich	Otter St.	Carman St.	Palmer St. W.	High Class Bituminous	100	No	100	6.4	6.4	640
036	174	Norwich (Township)	Evergreen St.	Zenda Line	Oxford Rd. 13	Gravel	100	No	3726	6.2	7.2	26827
042B	2558	Norwich (Township)	Hatchley Rd.	Base Line	231m E. of Base Line	Low Class Bituminous	0	No	231	6.8	7.8	1571
074.2	289	Norwich (Township)	New Rd.	Furnace Rd.	Coal Line	Low Class Bituminous	100	No	1451	5.9	5.9	8561
257	2567	Otterville	Oxford St.	Mill St. E.	Wellington St. E.	High Class Bituminous	100	No	279	6	6	1674
114C	363	Norwich (Township)	Pick Line	Maple Dell Rd.	Milldale Rd.	Gravel	100	No	1629	6.6	8.6	14009
222B	371	Norwich	Pitcher St.	Carman St.	Palmer St. W.	High Class Bituminous	100	No	100	6.3	6.3	630
104A.1	458	Norwich (Township)	Zenda Line	Salford Rd.	Evergreen St.	Gravel	50	Yes	1617	7	9	14553
115	200	Norwich (Township)	Hanmer Line	Airport Rd.	Maple Dell Rd.	Low Class Bituminous	100	No	1637	5.8	5.8	9495
080	2550	Norwich (Township)	Mall Rd.	Oxford Rd. 13	Byerlay Sideroad	Low Class Bituminous	50	Yes	1977	7.1	7.1	14037
206B	400	Norwich	South Court St. W.	John St.	Washington St.	High Class Bituminous	100	No	107	5.9	5.9	631
214C.1	104	Norwich	Carman St.	Marshall Dr.	Florence St.	High Class Bituminous	100	No	75	8.6	8.6	645
230C	119	Norwich	Centre St.	Elgin St.	Main St. W.	High Class Bituminous	100	No	147	6.9	6.9	1014
082	221	Norwich (Township)	Mall Rd.	Middletown Line	Summerville Line	Low Class Bituminous	50	Yes	3684	7.1	8.1	26156
074B	253	Norwich (Township)	Middletown Line	New Rd.	Potters Rd. (Oxford Rd. 37)	Low Class Bituminous	100	No	1529	6.7	6.7	10244
061	2596	Norwich (Township)	Milldale Rd.	Pick Line	Highway 59	Low Class Bituminous	100	No	2090	6.25	6.25	13063
074.3	288	Norwich (Township)	New Rd.	Coal Line	Highway 59	Low Class Bituminous	100	No	157	6.7	6.7	1052
260B	303	Otterville	Norfolk St.	Albert St.	Dover St.	High Class Bituminous	100	No	187	6.2	6.2	1159
203B.1	314	Norwich	North Court St. W.	Clyde St.	John St.	High Class Bituminous	100	No	108	6.7	6.7	724
215B	355	Norwich	Palmer St. W.	Dufferin St.	Pitcher St.	High Class Bituminous	100	No	196	6.4	6.4	1254
207A	399	Norwich	South Court St. E.	Stover St. N.	Albert St.	High Class Bituminous	100	No	75	6.7	6.7	503
117A	451	Norwich (Township)	Windham Line	Airport Rd.	Windham Rd. 2	Low Class Bituminous	50	Yes	922	6.4	7.4	5901
133A	79	Norwich (Township)	Base Line	Otterville Rd.	Ninth Rd.	High Class Bituminous	100	No	1453	6.7	7.7	9735
213A.2	126	Norwich	Church St.	Front St.	Tidey St.	High Class Bituminous	100	No	60	6.6	6.6	396
079	2548	Norwich (Township)	Mall Rd.	Jackson Sideroad	Oxford Rd. 13	Low Class Bituminous	50	Yes	2318	7.3	7.3	16921
081	2549	Norwich (Township)	Mall Rd.	Byerlay Sideroad	Middletown Line	Low Class Bituminous	50	Yes	1747	7.5	7.5	13103
084A	220	Norwich (Township)	Mall Rd.	Highway 59	Base Line	High Class Bituminous	50	Yes	1649	6.5	8.1	10719

Appendix E - Road Improvement Needs

Municipal ID	Roadside Environment	AADT Range	AADT	AADT Method	AADT Year	Ride Comfort Rating (RCR)	Structural Adequacy (1-20)	Drainage Deficiency Rating (1-10)	PCI / GCR	Condition Rating Class	Priority Guide Number (PGN)	Priority Rating (PR)	Proposed Lifecycle Improvement
032	Rural	500-999	548	Actual Count	2023	7	18	13	68	Fair Condition	35.5	31.52	Resurface
220D	Semi-Urban	200-499	379	Estimate	N/A	8	18	13	68	Fair Condition	27.5	28.96	Resurface
067B	Rural	200-499	405	Actual Count	2022	9	19	14	68	Fair Condition	63.3	29.39	Resurface
031A	Rural	500-999	548	Actual Count	2023	8	20	15	69	Fair Condition	34.4	30.53	Resurface
225A	Semi-Urban	200-499	316	Estimate	N/A	8	17	14	69	Fair Condition	21.6	26.93	Resurface
063B	Rural	50-199	137	Actual Count	2023	8	20	15	69	Fair Condition	18.8	22.61	Resurface
128A	Rural	200-499	323	Actual Count	2022	8	18	12	69	Fair Condition	20	27.06	Resurface
124	Rural	50-199	80	Actual Count	2023	8	20	15	70	Satisfactory Condition	10.6	19.86	Resurface
021A.1	Rural	0-49	41	Actual Count	2023	8	12	13	70	Satisfactory Condition	0	18	Preventive Maintenance
021A.2	Rural	0-49	41	Actual Count	2023	8	12	13	70	Satisfactory Condition	0	18	Preventive Maintenance
078B	Rural	1000-1999	1874	Estimate	N/A	8	18	14	70	Satisfactory Condition	221.9	39.69	Resurface
057A	Rural	50-199	165	Actual Count	2023	9	20	15	70	Satisfactory Condition	22.3	22.7	Resurface
076	Rural	500-999	692	Actual Count	2023	8	19	14	70	Satisfactory Condition	89.3	31.21	Resurface
013B	Semi-Urban	0-49	27	Actual Count	2023	9	19	15	70	Satisfactory Condition	1.8	17.17	Resurface
222E	Semi-Urban	200-499	350	Estimate	N/A	8	18	13	70	Satisfactory Condition	21.5	26.66	Resurface
085	Rural	200-499	488	Actual Count	2023	9	20	15	70	Satisfactory Condition	63	28.76	Resurface
140A	Rural	200-499	247	Actual Count	2023	9	20	15	70	Satisfactory Condition	32.3	24.7	Resurface
031B	Rural	500-999	548	Actual Count	2023	8	18	13	71	Satisfactory Condition	32.2	28.56	Resurface
209	Semi-Urban	50-199	100	Estimate	N/A	9	18	15	71	Satisfactory Condition	6.7	19.95	Resurface
223A	Semi-Urban	200-499	250	Estimate	N/A	8	18	13	71	Satisfactory Condition	17	23.93	Resurface
036	Rural	50-199	85	Actual Count	2023	7	13	13	72	Satisfactory Condition	0	18.72	Preventive Maintenance
042B	Rural	50-199	158	Estimate	N/A	8	18	14	72	Satisfactory Condition	18.7	21.01	Resurface
074.2	Rural	50-199	169	Actual Count	2023	9	19	14	72	Satisfactory Condition	23.1	21.29	Resurface
257	Semi-Urban	50-199	75	Estimate	N/A	8	16	13	72	Satisfactory Condition	5.2	18.34	Resurface
114C	Rural	50-199	113	Actual Count	2023	7	13	13	72	Satisfactory Condition	0	19.7	Preventive Maintenance
222B	Semi-Urban	200-499	350	Estimate	N/A	8	18	13	72	Satisfactory Condition	23.3	24.89	Resurface
104A.1	Rural	50-199	121	Actual Count	2023	7	13	13	72	Satisfactory Condition	0	15.67	Preventive Maintenance
115	Rural	50-199	96	Actual Count	2023	9	20	15	73	Satisfactory Condition	12.9	18.44	Resurface
080	Rural	500-999	776	Estimate	N/A	9	19	14	73	Satisfactory Condition	85	28.86	Resurface
206B	Semi-Urban	200-499	250	Estimate	N/A	7	17	14	73	Satisfactory Condition	17.1	22.28	Resurface
214C.1	Urban	200-499	350	Estimate	N/A	8	18	13	74	Satisfactory Condition	12.4	23.11	Resurface
230C	Semi-Urban	200-499	392	Estimate	N/A	8	19	14	74	Satisfactory Condition	22.1	23.71	Resurface
082	Rural	1000-1999	1395	Actual Count	2023	8	19	14	74	Satisfactory Condition	147.2	32	Resurface
074B	Rural	200-499	200	Actual Count	2023	9	19	14	74	Satisfactory Condition	22.3	20.47	Resurface
061	Rural	200-499	233	Actual Count	2022	9	20	15	74	Satisfactory Condition	27.9	21.14	Resurface
074.3	Rural	50-199	169	Actual Count	2023	9	19	14	74	Satisfactory Condition	18.9	19.77	Resurface
260B	Semi-Urban	50-199	75	Estimate	N/A	8	17	13	74	Satisfactory Condition	4.7	17.03	Resurface
203B.1	Semi-Urban	200-499	390	Estimate	N/A	8	19	15	74	Satisfactory Condition	22.7	23.68	Resurface
215B	Semi-Urban	200-499	250	Estimate	N/A	8	18	13	74	Satisfactory Condition	15.2	21.46	Resurface
207A	Semi-Urban	200-499	350	Estimate	N/A	8	18	15	74	Satisfactory Condition	20.3	23.11	Resurface
117A	Rural	500-999	635	Actual Count	2023	8	18	14	74	Satisfactory Condition	74.3	26.51	Resurface
133A	Rural	1000-1999	1111	Actual Count	2023	8	19	14	75	Satisfactory Condition	111.4	29.12	Preventive Maintenance
213A.2	Semi-Urban	50-199	75	Estimate	N/A	8	17	13	75	Satisfactory Condition	11.4	16.37	Preventive Maintenance
079	Rural	1000-1999	1874	Estimate	N/A	9	18	14	75	Satisfactory Condition	172.6	33.07	Preventive Maintenance
081	Rural	500-999	776	Estimate	N/A	8	18	14	75	Satisfactory Condition	104.3	26.72	Preventive Maintenance
084A	Rural	500-999	896	Actual Count	2023	8	19	14	75	Satisfactory Condition	138.9	27.66	Preventive Maintenance

Appendix E - Road Improvement Needs

Municipal ID	Proposed Improvement Type	Improvement Cost	Base Cost (m ²)	Condition Comments
032	1 HMA (50mm) Overlay + Patching + Nominal Shoulder/Ditch Repair	\$336,525.00	\$25.00	Heavily rutted at the start of the segment
220D	1 HMA (50mm) Overlay + Patching + Nominal Shoulder/Ditch Repair	\$27,550.00	\$25.00	
067B	Single Surface Treatment	\$87,061.00	\$13.00	
031A	1 HMA (50mm) Overlay + Patching + Nominal Shoulder/Ditch Repair	\$136,900.00	\$25.00	
225A	1 HMA (50mm) Overlay + Patching + Nominal Shoulder/Ditch Repair	\$31,275.00	\$25.00	
063B	Single Surface Treatment	\$175,760.00	\$13.00	
128A	1 HMA (50mm) Overlay + Patching + Nominal Shoulder/Ditch Repair	\$137,538.00	\$25.00	This road is scheduled to be improved in 2024 (Shared with SWOX)
124	Single Surface Treatment	\$137,150.00	\$13.00	
021A.1	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$10,219.00	\$1.00	
021A.2	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$18,419.00	\$1.00	Township noted that this road is typically maintenance intensive in the spring
078B	Single Surface Treatment	\$60,834.00	\$13.00	
057A	Single Surface Treatment	\$218,569.00	\$13.00	
076	Single Surface Treatment	\$100,334.00	\$13.00	Township noted a couple years ago they went end to end with patching
013B	1 HMA (50mm) Overlay + Patching + Nominal Shoulder/Ditch Repair	\$60,550.00	\$25.00	
222E	1 HMA (50mm) Overlay + Patching + Nominal Shoulder/Ditch Repair	\$11,675.00	\$25.00	Township noted this road is to be improved/widened when the property to the northeast is developed
085	Single Surface Treatment	\$142,493.00	\$13.00	FibreMat has been completed on this section
140A	Single Surface Treatment	\$43,459.00	\$13.00	
031B	1 HMA (50mm) Overlay + Patching + Nominal Shoulder/Ditch Repair	\$38,763.00	\$25.00	
209	1 HMA (50mm) Overlay + Patching + Nominal Shoulder/Ditch Repair	\$16,575.00	\$25.00	
223A	1 HMA (50mm) Overlay + Patching + Nominal Shoulder/Ditch Repair	\$16,000.00	\$25.00	
036	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$26,827.00	\$1.00	Township noted that the bush area of this segment is typically rough during spring
042B	Single Surface Treatment	\$0.00	\$13.00	
074.2	Single Surface Treatment	\$111,293.00	\$13.00	Potholes and edge breakup are present on this segment
257	1 HMA (50mm) Overlay + Patching + Nominal Shoulder/Ditch Repair	\$41,850.00	\$25.00	
114C	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$14,009.00	\$1.00	
222B	1 HMA (50mm) Overlay + Patching + Nominal Shoulder/Ditch Repair	\$15,750.00	\$25.00	
104A.1	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$14,553.00	\$1.00	
115	Single Surface Treatment	\$123,435.00	\$13.00	
080	Single Surface Treatment	\$91,241.00	\$13.00	
206B	1 HMA (50mm) Overlay + Patching + Nominal Shoulder/Ditch Repair	\$15,775.00	\$25.00	
214C.1	Defer to Rehabilitation	\$20,640.00	\$32.00	
230C	1 HMA (50mm) Overlay + Patching + Nominal Shoulder/Ditch Repair	\$25,350.00	\$25.00	
082	Single Surface Treatment	\$170,014.00	\$13.00	FibreMat has been completed on this section
074B	Single Surface Treatment	\$133,172.00	\$13.00	
061	Single Surface Treatment	\$169,819.00	\$13.00	
074.3	Single Surface Treatment	\$13,676.00	\$13.00	
260B	1 HMA (50mm) Overlay + Patching + Nominal Shoulder/Ditch Repair	\$28,975.00	\$25.00	
203B.1	1 HMA (50mm) Overlay + Patching + Nominal Shoulder/Ditch Repair	\$18,100.00	\$25.00	
215B	1 HMA (50mm) Overlay + Patching + Nominal Shoulder/Ditch Repair	\$31,350.00	\$25.00	
207A	1 HMA (50mm) Overlay + Patching + Nominal Shoulder/Ditch Repair	\$12,575.00	\$25.00	
117A	Single Surface Treatment	\$38,357.00	\$13.00	
133A	Micro-Surfacing	\$58,410.00	\$6.00	Breakup is present throughout the road segment
213A.2	Slurry Seal	\$1,584.00	\$4.00	
079	Micro-Surfacing	\$50,763.00	\$6.00	
081	Slurry Seal	\$26,206.00	\$4.00	Township noted that Norfolk will probably install a lift of surface treatment this year (2023)
084A	Slurry Seal	\$21,438.00	\$4.00	

Appendix E - Road Improvement Needs

Municipal ID	Asset or PSAB ID	Community	Name	Name From	Name To	Surface Material	Capital Maint. %	Boundary Road	Road Length (m)	Road Width (m)	Platform Width (m)	Surface Area (m ²)
056B	225	Norwich (Township)	Maple Dell Rd.	Pick Line	Hwy 59	Gravel	100	No	1861	6	8	14888
213D	423	Norwich	Tidey St.	Pitcher St.	Stover St. S.	High Class Bituminous	100	No	183	6.7	6.7	1226
140B	450	Norwich (Township)	Westtown Line	Simcoe St.	Mall Rd.	Low Class Bituminous	50	Yes	120	6.4	6.4	768
034C	2578	Norwich (Township)	Beaconsfield Rd.	McCready Line	Oxford Rd. 14	Gravel	100	No	1556	6.4	8.4	13070
249	2636	Norwich	Caroll St.	Marshall Dr.	Florence St.	High Class Bituminous	100	No	70	8.7	8.7	609
223C	345	Norwich	Otter St.	South St.	Jerdon St.	High Class Bituminous	100	No	106	6.4	6.4	678
135	2562	Norwich (Township)	Rock's Mills Line	Oxford Rd. 13	Oxford Rd. 37 (Potters Rd.)	Low Class Bituminous	100	No	1715	6.4	6.4	10976
211A	185	Norwich	George St.	Elgin St. E.	End	High Class Bituminous	100	No	61	7.8	7.8	476
243	2639	Norwich	Moore Cres.	Marshall Dr.	Cayley St.	High Class Bituminous	100	No	288	8.6	8.6	2477
074.1	291	Norwich (Township)	New Rd.	Middletown Line	Furnace Rd.	High Class Bituminous	100	No	2074	5.9	5.9	12237
203B.2	313	Norwich	North Court St. W.	John St.	Washington St.	High Class Bituminous	100	No	107	6.7	6.7	717
028A	413	Norwich (Township)	Substation Rd.	Middletown Line	Oriel Line	Gravel	100	No	2115	6	8	16920
028B	414	Norwich (Township)	Substation Rd.	Oriel Line	Oxford Rd. 14	Gravel	100	No	1528	6	8	12224
237A	440	Norwich	Washington St.	Elgin St. W.	Main St. W.	High Class Bituminous	100	No	150	6.7	6.7	1005
214B.1	107	Norwich	Carman St.	Avery's Lane	Dufferin St.	High Class Bituminous	100	No	92	6.5	6.5	598
212A	180	Norwich	Front St.	Avery's Lane	Church St.	High Class Bituminous	100	No	185	6.4	6.4	1184
262D	214	Otterville	John St. S.	Wellington St. E.	Dover St.	High Class Bituminous	100	No	397	6.6	6.6	2620
084B	2605	Norwich (Township)	Mall Rd.	Base Line	Swimming Pool Rd.	High Class Bituminous	50	Yes	1334	6.5	7.5	8671
059	2595	Norwich (Township)	Milldale Rd.	Oxford Rd. 13	Middletown Line	Gravel	100	No	3777	6.3	8.3	31349
296		Norwich (Township)	Oxford Rd. 13	Oxford Rd. 13	Milldale Rd.	Gravel	100	No	103	6.3	8.3	855
297		Norwich (Township)	Oxford Rd. 13	Oxford Rd. 13	Milldale Rd.	Gravel	100	No	74	6.3	8.3	614
215A.2	353	Norwich	Palmer St. W.	Otter St.	Stover St. S.	High Class Bituminous	100	No	100	5.7	5.7	570
206C	402	Norwich	South Court St. W.	Washington St.	Stover St. N.	High Class Bituminous	100	No	125	6.4	6.4	800
235A.1	433	Norwich	Victoria St.	North St. E.	Brock St. E.	High Class Bituminous	100	No	177	6	6	1062
117B		Norwich (Township)	Windham Line	Windham Rd. 2	Maple Dell Rd.	Low Class Bituminous	50	Yes	701	6	6	4206
239B	58	Norwich	Albert St.	Elgin St. E.	Main St. E.	High Class Bituminous	100	No	150	6.8	6.8	1020
210A.3	167	Norwich	Elgin St. E.	Albert St.	Victoria St.	High Class Bituminous	100	No	76	6.9	6.9	524
225B	178	Norwich	Florence St.	Caroll St.	Carman St.	High Class Bituminous	100	No	170	6.6	6.6	1122
272A		Burgessville	McNab St.	Middletown Line	100m E. of Middletown Line	High Class Bituminous	100	No	105	6.7	6.7	704
060	282	Norwich (Township)	Milldale Rd.	Middletown Line	Pick Line	Gravel	100	No	1571	6	8	12568
095A	429	Norwich (Township)	Vandecar Line	Old Stage Rd.	Curries Rd.	Gravel	100	No	1584	5.4	6.4	10138
048B	100	Norwich (Township)	Caley Rd.	Base Line	Windham Line	Low Class Bituminous	100	No	625	6.8	7.8	4250
058A	2503	Norwich (Township)	Milldale Rd.	Zenda Line	1.9km W. of Oxford Rd. 13	High Class Bituminous	100	No	1828	7.3	8.3	13344
223B	343	Norwich	Otter St.	Palmer St. W.	South St.	High Class Bituminous	100	No	161	6.4	6.4	1030
006	2572	Norwich (Township)	Pattullo Ave	Oxford Rd. 14	Highway 53	Gravel	100	No	1847	6.4	7.4	13668
254C	90	Otterville	Bond St.	North St. E.	Main St. E.	High Class Bituminous	100	No	118	7.2	7.2	850
210A.2	166	Norwich	Elgin St. E.	Stover St. N.	Albert St.	High Class Bituminous	100	No	72	6.9	6.9	497
210A.4	168	Norwich	Elgin St. E.	Victoria St.	Cook St.	High Class Bituminous	100	No	88	6.5	6.5	572
211B	184	Norwich	George St.	Elgin St. E.	Main St. E.	High Class Bituminous	100	No	151	7.6	7.6	1148
224B	2647	Norwich	Marshall Dr.	Caroll St.	Pollard St.	High Class Bituminous	100	No	88	8.5	8.5	748
094	247	Norwich (Township)	Middletown Line	Firehall Rd.	Curries Rd.	High Class Bituminous	100	No	1586	7.2	9.2	11419
136	2620	Norwich (Township)	Neidert Line	Potters Rd.	Middletown Line	Gravel	100	No	2340	5	6	14040
254F.3	319	Otterville	North St. E.	Bond St.	Cedar St.	High Class Bituminous	100	No	169	6.1	6.1	1031
049	375	Norwich (Township)	Pleasant Valley Rd.	Zenda Line	Middletown Line	Gravel	100	No	3736	6	8	29888
142	2621	Norwich (Township)	Pleasant Valley Rd.	E. of Zenda Line (dog leg)	Pleasant Valley Rd.	Gravel	100	No	233	6	8	1864
045	379	Norwich (Township)	Quaker St.	Middletown Line	Highway 59	High Class Bituminous	100	No	3547	7.1	7.1	25184
112	452	Norwich (Township)	Windham Line	Caley Rd.	Airport Rd.	Low Class Bituminous	50	Yes	819	6.4	7.4	5242
033A	2576	Norwich (Township)	Beaconsfield Rd.	Hwy 59	299m E. of Middletown Line	Gravel	100	No	3326	6.3	8.3	27606
210B.1	2624	Norwich	Elgin St. W.	Clyde St.	John St.	High Class Bituminous	100	No	108	6.7	6.7	724

Appendix E - Road Improvement Needs

Municipal ID	Roadside Environment	AADT Range	AADT	AADT Method	AADT Year	Ride Comfort Rating (RCR)	Structural Adequacy (1-20)	Drainage Deficiency Rating (1-10)	PCI / GCR	Condition Rating Class	Priority Guide Number (PGN)	Priority Rating (PR)	Proposed Lifecycle Improvement
056B	Rural	50-199	83	Actual Count	2023	7	14	13	75	Satisfactory Condition	0	16.65	Preventive Maintenance
213D	Semi-Urban	200-499	300	Estimate	N/A	8	18	14	75	Satisfactory Condition	45.1	21.47	Preventive Maintenance
140B	Rural	200-499	263	Estimate	N/A	9	20	15	75	Satisfactory Condition	41.4	20.86	Preventive Maintenance
034C	Rural	50-199	90	Actual Count	2023	6	14	14	76	Satisfactory Condition	0	16.21	Preventive Maintenance
249	Urban	50-199	50	Estimate	N/A	9	17	14	76	Satisfactory Condition	3.7	14.78	Preventive Maintenance
223C	Semi-Urban	200-499	250	Estimate	N/A	9	18	14	76	Satisfactory Condition	37.8	19.81	Preventive Maintenance
135	Rural	50-199	116	Actual Count	2023	9	20	15	76	Satisfactory Condition	17.5	16.96	Preventive Maintenance
211A	Semi-Urban	0-49	25	Estimate	N/A	8	17	13	77	Satisfactory Condition	2.9	13.06	Preventive Maintenance
243	Urban	50-199	100	Estimate	N/A	8	18	14	77	Satisfactory Condition	7.2	15.82	Preventive Maintenance
074.1	Rural	50-199	168	Actual Count	2023	8	19	14	77	Satisfactory Condition	26.4	17.47	Preventive Maintenance
203B.2	Semi-Urban	200-499	390	Estimate	N/A	8	18	14	77	Satisfactory Condition	53.9	20.95	Preventive Maintenance
028A	Rural	50-199	60	Actual Count	2023	6	15	13	77	Satisfactory Condition	0	14.55	Preventive Maintenance
028B	Rural	50-199	60	Actual Count	2023	6	15	13	77	Satisfactory Condition	0	14.55	Preventive Maintenance
237A	Semi-Urban	200-499	300	Estimate	N/A	9	19	15	77	Satisfactory Condition	41.5	19.75	Preventive Maintenance
214B.1	Semi-Urban	200-499	350	Estimate	N/A	7	18	13	78	Satisfactory Condition	47.7	19.55	Preventive Maintenance
212A	Semi-Urban	50-199	100	Estimate	N/A	9	19	13	78	Satisfactory Condition	13.8	15.14	Preventive Maintenance
262D	Semi-Urban	500-999	684	Estimate	N/A	8	18	14	78	Satisfactory Condition	91.9	22.82	Preventive Maintenance
084B	Rural	500-999	896	Actual Count	2023	7	19	13	78	Satisfactory Condition	122.3	24.34	Preventive Maintenance
059	Rural	0-49	38	Actual Count	2023	7	15	13	78	Satisfactory Condition	0	13.08	Preventive Maintenance
296	Rural	0-49	15	Estimate	N/A	7	15	13	78	Satisfactory Condition	0	11.98	Preventive Maintenance
297	Rural	0-49	15	Estimate	N/A	7	15	13	78	Satisfactory Condition	0	11.98	Preventive Maintenance
215A.2	Semi-Urban	200-499	250	Estimate	N/A	8	17	13	78	Satisfactory Condition	38.9	18.16	Preventive Maintenance
206C	Semi-Urban	200-499	250	Estimate	N/A	8	18	15	78	Satisfactory Condition	34.6	18.16	Preventive Maintenance
235A.1	Semi-Urban	200-499	250	Estimate	N/A	8	18	13	78	Satisfactory Condition	37	18.16	Preventive Maintenance
117B	Rural	500-999	635	Actual Count	2023	9	17	14	78	Satisfactory Condition	93.9	22.43	Preventive Maintenance
239B	Semi-Urban	200-499	250	Estimate	N/A	8	18	12	79	Satisfactory Condition	31.1	17.33	Preventive Maintenance
210A.3	Urban	200-499	250	Estimate	N/A	8	18	14	79	Satisfactory Condition	20.5	17.33	Preventive Maintenance
225B	Semi-Urban	200-499	316	Estimate	N/A	9	18	13	79	Satisfactory Condition	40.5	18.24	Preventive Maintenance
272A	Semi-Urban	50-199	50	Estimate	N/A	9	19	14	79	Satisfactory Condition	6.3	12.94	Preventive Maintenance
060	Rural	0-49	40	Actual Count	2023	8	15	13	79	Satisfactory Condition	0	12.56	Preventive Maintenance
095A	Rural	0-49	9	Actual Count	2023	8	15	13	79	Satisfactory Condition	0	11.11	Preventive Maintenance
048B	Rural	200-499	208	Actual Count	2023	9	19	14	80	Satisfactory Condition	24.6	15.87	Preventive Maintenance
058A	Rural	200-499	386	Actual Count	2023	9	20	15	80	Satisfactory Condition	42.6	18.17	Preventive Maintenance
223B	Semi-Urban	200-499	250	Estimate	N/A	9	18	13	80	Satisfactory Condition	31.5	16.51	Preventive Maintenance
006	Rural	50-199	72	Actual Count	2023	6	16	13	80	Satisfactory Condition	0	13.01	Preventive Maintenance
254C	Semi-Urban	50-199	75	Estimate	N/A	9	18	13	81	Satisfactory Condition	7.9	12.44	Preventive Maintenance
210A.2	Urban	200-499	250	Estimate	N/A	8	19	13	81	Satisfactory Condition	18.5	15.68	Preventive Maintenance
210A.4	Semi-Urban	200-499	250	Estimate	N/A	8	18	14	81	Satisfactory Condition	29.5	15.68	Preventive Maintenance
211B	Semi-Urban	50-199	150	Estimate	N/A	8	19	13	81	Satisfactory Condition	15.1	14.11	Preventive Maintenance
224B	Urban	200-499	250	Estimate	N/A	9	18	14	81	Satisfactory Condition	15	15.68	Preventive Maintenance
094	Rural	500-999	582	Actual Count	2023	9	18	15	81	Satisfactory Condition	61.9	18.98	Preventive Maintenance
136	Rural	0-49	16	Estimate	N/A	7	16	13	81	Satisfactory Condition	0	10.4	Preventive Maintenance
254F.3	Semi-Urban	50-199	140	Estimate	N/A	8	19	13	81	Satisfactory Condition	17.5	13.92	Preventive Maintenance
049	Rural	50-199	94	Actual Count	2023	7	16	13	81	Satisfactory Condition	0	12.93	Preventive Maintenance
142	Rural	50-199	64	Estimate	N/A	7	16	13	81	Satisfactory Condition	0	12.14	Preventive Maintenance
045	Rural	500-999	628	Actual Count	2023	8	19	15	81	Satisfactory Condition	67.7	19.32	Preventive Maintenance
112	Rural	200-499	359	Actual Count	2023	8	19	14	81	Satisfactory Condition	43	16.98	Preventive Maintenance
033A	Rural	50-199	128	Actual Count	2023	6	16	14	82	Satisfactory Condition	0	12.96	Preventive Maintenance
210B.1	Urban	200-499	250	Estimate	N/A	8	19	15	82	Satisfactory Condition	18.1	14.86	Preventive Maintenance

Appendix E - Road Improvement Needs

Municipal ID	Proposed Improvement Type	Improvement Cost	Base Cost (m ²)	Condition Comments
056B	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$14,888.00	\$1.00	Some wheel track rutting and potholes
213D	Slurry Seal	\$4,904.00	\$4.00	
140B	Slurry Seal	\$1,536.00	\$4.00	Significant asphalt patch work has been completed
034C	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$13,070.00	\$1.00	
249	Micro-Surfacing and Minor Patching	\$3,654.00	\$6.00	
223C	Slurry Seal	\$2,712.00	\$4.00	
135	Slurry Seal	\$43,904.00	\$4.00	Significant asphalt patch work has been completed
211A	Slurry Seal	\$1,904.00	\$4.00	
243	Micro-Surfacing and Minor Patching	\$14,862.00	\$6.00	
074.1	Slurry Seal	\$48,948.00	\$4.00	Minor edge breakup present
203B.2	Slurry Seal	\$2,868.00	\$4.00	
028A	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$16,920.00	\$1.00	Noted this section can be rough in the spring
028B	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$12,224.00	\$1.00	
237A	Slurry Seal	\$4,020.00	\$4.00	
214B.1	Slurry Seal	\$2,392.00	\$4.00	
212A	Slurry Seal	\$4,736.00	\$4.00	1 isolated patch of severe alligator cracking
262D	Slurry Seal	\$10,480.00	\$4.00	
084B	Slurry Seal	\$17,342.00	\$4.00	Shared with Norfolk, would require 1 year notice for work. Maintenance responsibility of Norwich
059	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$31,349.00	\$1.00	
296	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$855.00	\$1.00	
297	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$614.00	\$1.00	
215A.2	Slurry Seal	\$2,280.00	\$4.00	
206C	Slurry Seal	\$3,200.00	\$4.00	
235A.1	Slurry Seal	\$4,248.00	\$4.00	
117B	Slurry Seal	\$8,412.00	\$4.00	
239B	Slurry Seal	\$4,080.00	\$4.00	
210A.3	Micro-Surfacing and Minor Patching	\$3,144.00	\$6.00	This road segment has a well established crown
225B	Slurry Seal	\$4,488.00	\$4.00	Township noted that an overlay was completed on this segment due to heavy alligator cracking
272A	Slurry Seal	\$2,816.00	\$4.00	
060	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$12,568.00	\$1.00	
095A	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$10,138.00	\$1.00	
048B	Slurry Seal	\$17,000.00	\$4.00	Asphalt patching in the centre of the road
058A	Slurry Seal	\$53,376.00	\$4.00	Road was completed 16 years ago. Fibremat could be a good option
223B	Slurry Seal	\$4,120.00	\$4.00	
006	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$13,668.00	\$1.00	
254C	Slurry Seal	\$3,400.00	\$4.00	
210A.2	Micro-Surfacing and Minor Patching	\$2,982.00	\$6.00	
210A.4	Slurry Seal	\$2,288.00	\$4.00	
211B	Slurry Seal	\$4,592.00	\$4.00	
224B	Micro-Surfacing and Minor Patching	\$4,488.00	\$6.00	
094	Slurry Seal	\$45,676.00	\$4.00	
136	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$14,040.00	\$1.00	Will be spot graded. Sandy portion is quite broken up
254F.3	Slurry Seal	\$4,124.00	\$4.00	
049	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$29,888.00	\$1.00	Generally in good condition
142	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$1,864.00	\$1.00	
045	Slurry Seal	\$100,736.00	\$4.00	
112	Slurry Seal	\$10,484.00	\$4.00	Asphalt edge patching has been completed
033A	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$27,606.00	\$1.00	
210B.1	Micro-Surfacing and Minor Patching	\$4,344.00	\$6.00	

Appendix E - Road Improvement Needs

Municipal ID	Asset or PSAB ID	Community	Name	Name From	Name To	Surface Material	Capital Maint. %	Boundary Road	Road Length (m)	Road Width (m)	Platform Width (m)	Surface Area (m ²)
131	2739	Norwich (Township)	Furnace Rd.	Cornell Rd.	New Rd.	Low Class Bituminous	100	No	1243	6.95	6.95	8639
262A	215	Otterville	John St. S.	Main St. E.	Mill St. E.	High Class Bituminous	100	No	131	6.6	6.6	865
141	262	Norwich (Township)	Middletown Line	Potters Rd. (Oxford Rd. 37)	Mall Rd.	High Class Bituminous	100	No	1627	6.7	6.7	10901
058B	2381	Norwich (Township)	Milldale Rd.	Oxford Rd. 13	1.9km W. of Oxford Rd. 13	High Class Bituminous	100	No	1881	7.3	8.3	13731
254F.4	318	Otterville	North St. E.	Cedar St.	York St.	High Class Bituminous	100	No	152	6.3	6.3	958
237B	439	Norwich	Washington St.	South Court St. W.	Elgin St. W.	High Class Bituminous	100	No	166	8	8	1328
201A.2	91	Norwich	Brock St. W.	Clyde St.	John St.	High Class Bituminous	100	No	108	6.5	6.5	702
096A.2	113	Norwich (Township)	Cedar Line	Rivers Rd.	Gunn's Hill Rd.	Gravel	50	Yes	1048	6.5	7.5	7860
068	2601	Norwich (Township)	Ninth Rd.	W. of Base Line	End	Gravel	100	No	1840	5.8	6.8	12512
254F.1	315	Otterville	North St. E.	William St.	John St. N.	High Class Bituminous	100	No	238	6.5	6.5	1547
215A.1	354	Norwich	Palmer St. W.	Pitcher St.	Otter St.	High Class Bituminous	100	No	84	6.4	6.4	538
005	359	Norwich (Township)	Pattullo Ave	Middletown Line	Oxford Rd. 14	Gravel	100	No	1974	6	8	15792
213C	422	Norwich	Tidey St.	Church St.	Pitcher St.	High Class Bituminous	100	No	116	6.5	6.5	754
003	424	Norwich (Township)	Towerline Rd.	Highway 53	Muir Line	Gravel	100	No	3379	6.5	7.5	25343
134	2619	Norwich (Township)	Zenda Line	Cornell Rd.	541m S. of Cornell Rd.	Low Class Bituminous	50	Yes	541	6.2	6.2	3354
242A	61	Norwich	Avery's Lane.	Main St. W.	Front St.	High Class Bituminous	100	No	65	6.5	6.5	423
138A	65	Norwich (Township)	Base Line	New Rd.	Cecilia St.	High Class Bituminous	100	No	155	6.7	7.7	1039
263B	269	Otterville	Buchan St.	Main St. E.	Mill St. E.	High Class Bituminous	100	No	127	6.3	6.3	800
102B	242	Norwich (Township)	Middletown Line	Beaconsfield Rd.	831m S. of Beaconsfield Rd.	High Class Bituminous	100	No	834	7.2	8.2	6005
102C	242	Norwich (Township)	Middletown Line	831m S. of Beaconsfield Rd.	McNab St.	High Class Bituminous	100	No	640	7.2	8.2	4608
229C	406	Norwich	Spring St.	Mary St.	Elgin St.	High Class Bituminous	100	No	156	7.5	7.5	1170
002	2737	Norwich (Township)	Subway Line	Highway 2	Highway 53	Low Class Bituminous	100	No	949	7.2	8.2	6833
234A	442	Norwich	Washington St.	North St. W.	Brock St. W.	High Class Bituminous	100	No	178	6.6	6.6	1175
086	66	Norwich (Township)	Base Line	Potters Rd.	Mall Rd.	High Class Bituminous	100	No	1673	6.7	6.7	11209
116E	68	Norwich (Township)	Base Line	Milldale Rd.	Otterville Rd. (Oxford Rd. 19)	High Class Bituminous	100	No	1641	7.2	9.2	11815
213A.1	125	Norwich	Church St.	Main St. W.	Front St.	High Class Bituminous	100	No	64	6.5	6.5	416
220A	158	Norwich	Dufferin St	Carman St	Palmer St W	High Class Bituminous	100	No	100	7	7	700
220B	157	Norwich	Dufferin St.	Palmer St. W.	South St.	High Class Bituminous	100	No	163	7	7	1141
208	161	Norwich	Elgin St. E.	Cook St.	George St.	High Class Bituminous	100	No	102	6.5	6.5	663
210A.1	2622	Norwich	Elgin St. W.	Washington St.	Stover St. N.	High Class Bituminous	100	No	127	6.9	6.9	876
105B.1	2321	Norwich (Township)	Middletown Line	Quaker St.	Norwich Rd.	High Class Bituminous	100	No	1612	6.8	8.8	10962
130	2617	Norwich (Township)	Middletown Line	Cornell Rd.	New Rd.	Gravel	100	No	1172	5.7	6.7	7852
216	403	Norwich	South St.	Dufferin St.	Pitcher St.	High Class Bituminous	100	No	195	6.7	6.7	1307
137	420	Norwich (Township)	Summerville Line	Coal Line	Potters Rd.	Low Class Bituminous	100	No	1458	7	7.4	10206
034B	2577	Norwich (Township)	Beaconsfield Rd.	Middletown Line	McCready Line	Gravel	100	No	1992	6.4	8.4	16733
035A.1	2579	Norwich (Township)	Beaconsfield Rd.	Oxford Rd. 14	Vandecar Line	Gravel	100	No	1820	5.9	7.9	14378
249B.2	2634	Norwich	Cayley St.	Marshall Dr.	Moore Cres.	High Class Bituminous	100	No	85	8.6	8.6	731
249B.3	109	Norwich	Cayley St.	Moore Cres.	Irving Dr.	High Class Bituminous	100	No	86	8.8	8.8	757
132B	2618	Norwich (Township)	Coal Line	New Rd.	Highway 59	High Class Bituminous	100	No	274	7	8	1918
102A		Norwich (Township)	Middletown Line	Beaconsfield Rd.	Middletown Line	Gravel	100	No	157	6.4	8.4	1319
256A.1	267	Otterville	Mill St. E.	Dover St.	Oxford St.	High Class Bituminous	100	No	120	6.3	6.3	756
273B	294	Burgessville	Nichol Lane	McNab St.	Church St. E.	High Class Bituminous	100	No	118	6.5	6.5	767
222C	2625	Norwich	Pitcher St.	Tidey St.	Carman St.	High Class Bituminous	100	No	238	7.6	7.6	1809
027	412	Norwich (Township)	Substation Rd.	Highway 59	Middletown Line	Gravel	100	No	3654	6.5	7.5	27405
029A	415	Norwich (Township)	Substation Rd.	Oxford Rd. 14	Vandecar Line	Gravel	100	No	1513	6	7	10591
029B	416	Norwich (Township)	Substation Rd.	Vandecar Line	Vandecar Line	Gravel	100	No	313	6	7	2191
030	410	Norwich (Township)	Substation Rd.	Vandecar Line	Muir Line	Gravel	100	No	1829	6	7	12803
234B	438	Norwich	Washington St.	North St. W.	End	High Class Bituminous	100	No	74	6.6	6.6	488
104A.2	456	Norwich (Township)	Zenda Line	672m S. of Evergreen St.	Evergreen St.	Gravel	50	Yes	672	6.3	8.3	5578

Appendix E - Road Improvement Needs

Municipal ID	Roadside Environment	AADT Range	AADT	AADT Method	AADT Year	Ride Comfort Rating (RCR)	Structural Adequacy (1-20)	Drainage Deficiency Rating (1-10)	PCI / GCR	Condition Rating Class	Priority Guide Number (PGN)	Priority Rating (PR)	Proposed Lifecycle Improvement
131	Rural	200-499	256	Actual Count	2023	9	20	15	82	Satisfactory Condition	26.7	14.93	Preventive Maintenance
262A	Semi-Urban	500-999	684	Estimate	N/A	9	19	14	82	Satisfactory Condition	75.2	18.67	Preventive Maintenance
141	Rural	200-499	483	Actual Count	2023	8	19	14	82	Satisfactory Condition	52.3	17.22	Preventive Maintenance
058B	Rural	200-499	386	Actual Count	2023	9	20	15	82	Satisfactory Condition	38.4	16.36	Preventive Maintenance
254F.4	Semi-Urban	50-199	140	Estimate	N/A	8	18	13	82	Satisfactory Condition	16.1	13.19	Preventive Maintenance
237B	Semi-Urban	200-499	250	Estimate	N/A	8	19	14	82	Satisfactory Condition	22.7	14.86	Preventive Maintenance
201A.2	Semi-Urban	200-499	250	Estimate	N/A	8	18	14	83	Satisfactory Condition	26.4	14.03	Preventive Maintenance
096A.2	Rural	50-199	76	Actual Count	2023	6	17	13	83	Satisfactory Condition	0	11.16	Preventive Maintenance
068	Rural	50-199	192	Estimate	N/A	8	17	12	83	Satisfactory Condition	0	13.27	Preventive Maintenance
254F.1	Semi-Urban	50-199	150	Estimate	N/A	8	19	13	83	Satisfactory Condition	15.8	12.62	Preventive Maintenance
215A.1	Semi-Urban	200-499	250	Estimate	N/A	8	18	13	83	Satisfactory Condition	26.8	14.03	Preventive Maintenance
005	Rural	50-199	63	Actual Count	2023	7	16	14	83	Satisfactory Condition	0	10.83	Preventive Maintenance
213C	Semi-Urban	50-199	100	Estimate	N/A	9	18	13	83	Satisfactory Condition	10.5	11.7	Preventive Maintenance
003	Rural	50-199	97	Actual Count	2022	8	17	12	83	Satisfactory Condition	0	11.63	Preventive Maintenance
134	Rural	0-49	15	Estimate	N/A	9	20	15	83	Satisfactory Condition	1.6	9.26	Preventive Maintenance
242A	Semi-Urban	200-499	300	Estimate	N/A	9	18	13	84	Satisfactory Condition	29.8	13.74	Preventive Maintenance
138A	Rural	50-199	184	Actual Count	2023	9	18	14	84	Satisfactory Condition	17.7	12.38	Preventive Maintenance
263B	Semi-Urban	50-199	100	Estimate	N/A	9	19	13	84	Satisfactory Condition	10.2	11.01	Preventive Maintenance
102B	Rural	500-999	929	Actual Count	2023	9	20	15	84	Satisfactory Condition	83.3	17.85	Preventive Maintenance
102C	Semi-Urban	500-999	929	Actual Count	2023	9	20	15	84	Satisfactory Condition	83.3	17.85	Preventive Maintenance
229C	Semi-Urban	200-499	300	Estimate	N/A	9	19	15	84	Satisfactory Condition	25.8	13.74	Preventive Maintenance
002	Rural	500-999	552	Actual Count	2023	9	20	15	84	Satisfactory Condition	49.4	15.78	Preventive Maintenance
234A	Semi-Urban	50-199	100	Estimate	N/A	9	18	15	84	Satisfactory Condition	9.8	11.01	Preventive Maintenance
086	Rural	200-499	369	Actual Count	2022	9	20	15	85	Good Condition	0	13.49	Routine Maintenance
116E	Rural	500-999	928	Actual Count	2023	9	19	14	85	Good Condition	0	16.73	Routine Maintenance
213A.1	Semi-Urban	50-199	75	Estimate	N/A	9	18	13	85	Good Condition	0	9.82	Routine Maintenance
220A	Semi-Urban	200-499	379	Estimate	N/A	8	19	13	85	Good Condition	0	13.57	Routine Maintenance
220B	Semi-Urban	200-499	379	Estimate	N/A	8	19	14	85	Good Condition	0	13.57	Routine Maintenance
208	Semi-Urban	200-499	250	Estimate	N/A	8	18	14	85	Good Condition	0	12.38	Routine Maintenance
210A.1	Urban	200-499	250	Estimate	N/A	9	19	15	85	Good Condition	0	12.38	Routine Maintenance
105B.1	Rural	2000-2999	2542	Actual Count	2023	8	20	15	85	Good Condition	0	21.39	Routine Maintenance
130	Rural	0-49	25	Estimate	N/A	8	17	13	85	Good Condition	0	8.52	Preventive Maintenance
216	Semi-Urban	200-499	250	Estimate	N/A	8	19	14	85	Good Condition	0	12.38	Routine Maintenance
137	Rural	500-999	953	Actual Count	2023	9	20	15	85	Good Condition	0	16.84	Routine Maintenance
034B	Rural	50-199	90	Actual Count	2023	7	17	14	86	Good Condition	0	9.45	Preventive Maintenance
035A.1	Rural	50-199	59	Actual Count	2023	7	17	14	86	Good Condition	0	8.83	Preventive Maintenance
249B.2	Urban	200-499	250	Estimate	N/A	9	18	14	86	Good Condition	0	11.55	Routine Maintenance
249B.3	Urban	200-499	250	Estimate	N/A	9	18	14	86	Good Condition	0	11.55	Routine Maintenance
132B	Rural	500-999	660	Actual Count	2023	8	20	15	86	Good Condition	0	14.4	Routine Maintenance
102A	Rural	0-49	15	Estimate	N/A	7	17	14	86	Good Condition	0	7.63	Preventive Maintenance
256A.1	Semi-Urban	50-199	100	Estimate	N/A	8	18	14	86	Good Condition	0	9.63	Routine Maintenance
273B	Semi-Urban	50-199	50	Estimate	N/A	9	19	15	86	Good Condition	0	8.62	Routine Maintenance
222C	Urban	200-499	350	Estimate	N/A	9	18	14	86	Good Condition	0	12.44	Routine Maintenance
027	Rural	50-199	84	Actual Count	2023	7	17	14	86	Good Condition	0	9.34	Preventive Maintenance
029A	Rural	50-199	85	Actual Count	2023	7	17	14	86	Good Condition	0	9.36	Preventive Maintenance
029B	Rural	50-199	85	Actual Count	2023	7	17	14	86	Good Condition	0	9.36	Preventive Maintenance
030	Rural	50-199	85	Actual Count	2023	7	17	14	86	Good Condition	0	9.36	Preventive Maintenance
234B	Semi-Urban	0-49	10	Estimate	N/A	8	18	15	86	Good Condition	0	7.45	Routine Maintenance
104A.2	Rural	50-199	121	Actual Count	2023	7	17	14	86	Good Condition	0	9.97	Preventive Maintenance

Appendix E - Road Improvement Needs

Municipal ID	Proposed Improvement Type	Improvement Cost	Base Cost (m ²)	Condition Comments
131	Slurry Seal	\$34,556.00	\$4.00	
262A	Slurry Seal	\$3,460.00	\$4.00	
141	Slurry Seal	\$43,604.00	\$4.00	
058B	Slurry Seal	\$54,924.00	\$4.00	
254F.4	Slurry Seal	\$3,832.00	\$4.00	
237B	Slurry Seal	\$5,312.00	\$4.00	
201A.2	Slurry Seal	\$2,808.00	\$4.00	In fairly good condition compared to the adjacent segments due to infrastructure repair needs below the road
096A.2	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$7,860.00	\$1.00	
068	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$12,512.00	\$1.00	
254F.1	Slurry Seal	\$6,188.00	\$4.00	
215A.1	Slurry Seal	\$2,152.00	\$4.00	
005	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$15,792.00	\$1.00	
213C	Slurry Seal	\$3,016.00	\$4.00	
003	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$25,343.00	\$1.00	
134	Slurry Seal	\$6,708.00	\$4.00	
242A	Slurry Seal	\$1,692.00	\$4.00	
138A	Slurry Seal	\$4,156.00	\$4.00	
263B	Slurry Seal	\$3,200.00	\$4.00	
102B	Slurry Seal	\$24,020.00	\$4.00	
102C	Slurry Seal	\$18,432.00	\$4.00	
229C	Slurry Seal	\$4,680.00	\$4.00	
002	Slurry Seal	\$27,332.00	\$4.00	
234A	Slurry Seal	\$4,700.00	\$4.00	
086	Responsive Maintenance	\$0.00	\$0.00	
116E	Responsive Maintenance	\$0.00	\$0.00	
213A.1	Responsive Maintenance	\$0.00	\$0.00	
220A	Responsive Maintenance	\$0.00	\$0.00	
220B	Responsive Maintenance	\$0.00	\$0.00	
208	Responsive Maintenance	\$0.00	\$0.00	
210A.1	Responsive Maintenance	\$0.00	\$0.00	
105B.1	Responsive Maintenance	\$0.00	\$0.00	
130	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$7,852.00	\$1.00	Spot grading at the time of inspection
216	Responsive Maintenance	\$0.00	\$0.00	
137	Responsive Maintenance	\$0.00	\$0.00	FibreMat has been completed on this section
034B	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$16,733.00	\$1.00	
035A.1	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$14,378.00	\$1.00	
249B.2	Responsive Maintenance	\$0.00	\$0.00	Patching to be completed this year (2023)
249B.3	Responsive Maintenance	\$0.00	\$0.00	
132B	Responsive Maintenance	\$0.00	\$0.00	FibreMat has been completed on this section
102A	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$1,319.00	\$1.00	
256A.1	Responsive Maintenance	\$0.00	\$0.00	
273B	Responsive Maintenance	\$0.00	\$0.00	
222C	Responsive Maintenance	\$0.00	\$0.00	
027	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$27,405.00	\$1.00	Township noted planned geotechnical work for full load conversion to the cattle company driveway
029A	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$10,591.00	\$1.00	
029B	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$2,191.00	\$1.00	
030	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$12,803.00	\$1.00	
234B	Responsive Maintenance	\$0.00	\$0.00	
104A.2	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$5,578.00	\$1.00	

Appendix E - Road Improvement Needs

Municipal ID	Asset or PSAB ID	Community	Name	Name From	Name To	Surface Material	Capital Maint. %	Boundary Road	Road Length (m)	Road Width (m)	Platform Width (m)	Surface Area (m ²)
104B.2	456	Norwich (Township)	Zenda Line	Quaker St.	514m N. of Quaker St.	Gravel	50	Yes	514	6.3	8.3	4266
242B	60	Norwich	Avery's Lane.	Front St.	Carman St.	High Class Bituminous	100	No	297	6.1	6.1	1812
107A	70	Norwich (Township)	Base Line	New Durham Rd.	Second Rd.	High Class Bituminous	100	No	171	7.2	8.2	1231
107B	71	Norwich (Township)	Base Line	Second Rd.	Eleventh Conc Rd.	High Class Bituminous	100	No	866	7.2	8.2	6235
107C	72	Norwich (Township)	Base Line	Eleventh Conc Rd.	Evergreen St.	High Class Bituminous	100	No	968	7.2	8.2	6970
116B	77	Norwich (Township)	Base Line	Caley Rd.	Airport Rd.	High Class Bituminous	100	No	813	7.2	9.2	5854
138B	63	Norwich (Township)	Base Line	Cecilia St	Nelson St	High Class Bituminous	100	No	661	6.7	6.7	4429
138C	64	Norwich (Township)	Base Line	Nelson St.	Wendy's Rd.	High Class Bituminous	100	No	165	6.7	7.7	1106
093A	114	Norwich (Township)	Cedar Line	426m N. of Curries Rd.	Sweaburg Rd.	Gravel	50	Yes	1584	6.4	8.4	13306
093B	2547	Norwich (Township)	Cedar Line	426m N. of Curries Rd.	Curries Rd.	Gravel	50	Yes	426	6.4	8.4	3578
230A.1	2642	Norwich	Centre St.	Bailey St.	End	High Class Bituminous	100	No	204	8.5	8.5	1734
210B.2	2623	Norwich	Elgin St. W.	John St.	Washington St.	High Class Bituminous	100	No	105	6.7	6.7	704
041B	2585	Norwich (Township)	Evergreen St.	Slant Rd.	Base Line	Gravel	100	No	1586	7	9	14274
022A	189	Norwich (Township)	Gunn's Hill Rd.	Cedar Line	Old School Line	Gravel	100	No	1512	6.2	7.2	10886
022B	190	Norwich (Township)	Gunn's Hill Rd.	Old School Line	Highway 59	Gravel	100	No	269	6.2	7.2	1937
024C	194	Norwich (Township)	Gunn's Hill Rd.	Oriel Line	Oxford Rd. 14	Gravel	100	No	1298	6.2	7.2	9346
111A	202	Norwich (Township)	Hanmer Line	Norwich Rd.	Caley Rd.	Gravel	100	No	856	5.8	6.8	5821
111B	201	Norwich (Township)	Hanmer Line	Caley Rd.	Airport Rd.	Gravel	100	No	906	5.8	6.8	6161
262C	217	Otterville	John St. S.	Queen St. E.	Wellington St. E.	High Class Bituminous	100	No	138	6.6	6.6	911
054	226	Norwich (Township)	Maple Dell Rd.	Zenda Line	Jones Line	Gravel	100	No	5357	7	9	48213
103B	238	Norwich (Township)	McCready Line	Highway 59	Evergreen St.	Gravel	100	No	1739	5.2	6.2	10782
105A.1	2319	Burgessville	Middletown Line	387m S. of Church St.	Evergreen St.	High Class Bituminous	100	No	1251	6.8	8.4	8507
256A.2	271	Otterville	Mill St. E.	Oxford St.	John St. S.	High Class Bituminous	100	No	117	6.3	6.3	737
073A	2602	Norwich (Township)	New Rd.	Zenda Line	Union Line	High Class Bituminous	100	No	1692	6.2	7.2	10490
073B	292	Norwich (Township)	New Rd.	Union Rd.	Oxford Rd. 13	High Class Bituminous	100	No	2068	6.2	7.2	12822
066A	2600	Norwich (Township)	Ninth Rd.	Oxford Rd. 13	Oatman Line	Gravel	100	No	1034	5	7	7238
066B	2599	Norwich (Township)	Ninth Rd.	Oatman Line	Middletown Line	Gravel	100	No	2655	5	5	13275
260A	304	Otterville	Norfolk St.	Albert St.	End (Cul-de-Sac)	High Class Bituminous	100	No	132	6.3	6.3	832
203A	311	Norwich	North Court St. W.	Centre St.	Clyde St.	High Class Bituminous	100	No	569	6.7	6.7	3812
254F.2	316	Otterville	North St. E.	John St. N.	Bond St.	High Class Bituminous	100	No	159	6.2	6.2	986
250A.2	2309	Otterville	North St. W.	Grove St.	Maple St.	High Class Bituminous	100	No	188	6.4	6.4	1203
016B	2334	Norwich (Township)	Old Stage Rd.	480m E. of Middletown Line	Old 14 Line	Gravel	100	No	3156	6.8	7.8	24617
300		Norwich (Township)	Oxford Rd. 14	Oxford Rd. 14	Gunn's Hill Rd.	Gravel	100	No	96	6.2	7.2	691
007	360	Norwich (Township)	Pattullo Ave	Highway 53	Muir Line	Gravel	100	No	1817	5.8	6.8	12356
114A	364	Norwich (Township)	Pick Line	Norwich Rd.	Airport Rd.	Gravel	100	No	1575	6.5	7.5	11813
229B	409	Norwich	Spring St.	Bailey St.	Mary St.	High Class Bituminous	100	No	196	7.5	7.5	1470
026	411	Norwich (Township)	Substation Rd.	Cedar Line	Highway 59	Gravel	100	No	1792	6.8	8.8	15770
062A	427	Norwich (Township)	Vanash Rd.	E. of Highway 59	End	Gravel	100	No	440	5	6	2640
116C	78	Norwich (Township)	Base Line	Airport Rd.	Maple Dell Rd.	High Class Bituminous	100	No	1632	7.2	8.2	11750
214B.2	103	Norwich	Carman St.	Dufferin St.	Pitcher St.	High Class Bituminous	100	No	196	6.6	6.6	1294
249B.1	2633	Norwich	Cayley St.	Carman St.	Marshall Dr.	High Class Bituminous	100	No	84	8.6	8.6	722
231D	131	Norwich	Clyde St.	Elgin St. W.	Main St. W.	High Class Bituminous	100	No	150	6.4	6.4	960
024B	193	Norwich (Township)	Gunn's Hill Rd.	Middletown Line	Oriel Line	Gravel	100	No	2089	6	7	14623
250	2631	Norwich	Irving Dr.	Cayley St.	End	High Class Bituminous	100	No	220	8.6	8.6	1892
218B	206	Norwich	Jerdon St.	Otter St.	Stover St. S.	High Class Bituminous	100	No	99	7.5	7.5	743
254B	2565	Otterville	John St. N.	Main St. E.	North St. E.	High Class Bituminous	100	No	111	6.7	6.7	744
262B	216	Otterville	John St. S.	Mill St. E.	Queen St. E.	High Class Bituminous	100	No	141	6.6	6.6	931

Appendix E - Road Improvement Needs

Municipal ID	Roadside Environment	AADT Range	AADT	AADT Method	AADT Year	Ride Comfort Rating (RCR)	Structural Adequacy (1-20)	Drainage Deficiency Rating (1-10)	PCI / GCR	Condition Rating Class	Priority Guide Number (PGN)	Priority Rating (PR)	Proposed Lifecycle Improvement
104B.2	Rural	50-199	121	Actual Count	2023	7	17	14	86	Good Condition	0	9.97	Preventive Maintenance
242B	Semi-Urban	200-499	300	Estimate	N/A	8	18	13	87	Good Condition	0	11.16	Routine Maintenance
107A	Rural	500-999	909	Actual Count	2022	9	19	15	87	Good Condition	0	14.43	Routine Maintenance
107B	Rural	500-999	909	Actual Count	2022	9	19	15	87	Good Condition	0	14.43	Routine Maintenance
107C	Rural	500-999	909	Actual Count	2022	9	20	15	87	Good Condition	0	14.43	Routine Maintenance
116B	Rural	1000-1999	1406	Actual Count	2023	9	19	14	87	Good Condition	0	16.03	Routine Maintenance
138B	Rural	50-199	184	Actual Count	2023	9	19	14	87	Good Condition	0	10.06	Routine Maintenance
138C	Rural	50-199	184	Actual Count	2023	9	19	14	87	Good Condition	0	10.06	Routine Maintenance
093A	Rural	50-199	75	Actual Count	2023	8	17	14	87	Good Condition	0	8.51	Preventive Maintenance
093B	Rural	50-199	176	Estimate	N/A	8	17	14	87	Good Condition	0	9.97	Preventive Maintenance
230A.1	Urban	0-49	25	Estimate	N/A	9	19	15	87	Good Condition	0	7.38	Routine Maintenance
210B.2	Urban	200-499	250	Estimate	N/A	9	19	15	87	Good Condition	0	10.73	Routine Maintenance
041B	Rural	50-199	61	Actual Count	2022	8	17	14	87	Good Condition	0	8.24	Preventive Maintenance
022A	Rural	50-199	60	Actual Count	2022	8	17	14	87	Good Condition	0	8.22	Preventive Maintenance
022B	Rural	50-199	60	Actual Count	2022	8	17	14	87	Good Condition	0	8.22	Preventive Maintenance
024C	Rural	50-199	58	Actual Count	2022	8	17	14	87	Good Condition	0	8.18	Preventive Maintenance
111A	Rural	50-199	51	Actual Count	2023	8	17	14	87	Good Condition	0	8.03	Preventive Maintenance
111B	Rural	50-199	51	Actual Count	2023	8	17	14	87	Good Condition	0	8.03	Preventive Maintenance
262C	Semi-Urban	500-999	684	Estimate	N/A	9	19	14	87	Good Condition	0	13.49	Routine Maintenance
054	Rural	50-199	135	Actual Count	2023	7	18	13	87	Good Condition	0	9.46	Preventive Maintenance
103B	Rural	50-199	54	Actual Count	2023	8	17	14	87	Good Condition	0	8.1	Preventive Maintenance
105A.1	Rural	1000-1999	1545	Actual Count	2022	8	20	15	87	Good Condition	0	16.41	Routine Maintenance
256A.2	Semi-Urban	50-199	100	Estimate	N/A	9	19	13	87	Good Condition	0	8.94	Routine Maintenance
073A	Rural	500-999	615	Actual Count	2022	9	20	15	87	Good Condition	0	13.15	Routine Maintenance
073B	Rural	500-999	615	Actual Count	2022	9	20	15	87	Good Condition	0	13.15	Routine Maintenance
066A	Rural	0-49	40	Actual Count	2023	8	17	14	87	Good Condition	0	7.78	Preventive Maintenance
066B	Rural	0-49	40	Actual Count	2023	8	17	14	87	Good Condition	0	7.78	Preventive Maintenance
260A	Semi-Urban	0-49	40	Estimate	N/A	9	19	14	87	Good Condition	0	7.78	Routine Maintenance
203A	Semi-Urban	200-499	390	Estimate	N/A	9	19	15	87	Good Condition	0	11.84	Routine Maintenance
254F.2	Semi-Urban	50-199	140	Estimate	N/A	9	18	13	87	Good Condition	0	9.52	Routine Maintenance
250A.2	Semi-Urban	0-49	40	Estimate	N/A	9	19	13	87	Good Condition	0	7.78	Routine Maintenance
016B	Rural	50-199	83	Actual Count	2023	8	17	14	87	Good Condition	0	8.66	Preventive Maintenance
300	Rural	0-49	15	Estimate	N/A	8	17	14	87	Good Condition	0	7.08	Preventive Maintenance
007	Rural	0-49	36	Actual Count	2023	8	17	14	87	Good Condition	0	7.68	Preventive Maintenance
114A	Rural	50-199	113	Actual Count	2023	8	17	14	87	Good Condition	0	9.14	Preventive Maintenance
229B	Urban	200-499	200	Estimate	N/A	9	19	15	87	Good Condition	0	10.23	Routine Maintenance
026	Rural	50-199	85	Actual Count	2023	8	17	14	87	Good Condition	0	8.69	Preventive Maintenance
062A	Rural	50-199	137	Actual Count	2023	8	17	14	87	Good Condition	0	9.48	Preventive Maintenance
116C	Rural	1000-1999	1406	Actual Count	2023	9	19	14	88	Good Condition	0	14.8	Routine Maintenance
214B.2	Semi-Urban	200-499	350	Estimate	N/A	9	16	12	88	Good Condition	0	10.67	Routine Maintenance
249B.1	Urban	200-499	250	Estimate	N/A	9	18	14	88	Good Condition	0	9.9	Routine Maintenance
231D	Semi-Urban	200-499	303	Estimate	N/A	9	19	15	88	Good Condition	0	10.33	Routine Maintenance
024B	Rural	50-199	58	Actual Count	2022	8	18	13	88	Good Condition	0	7.55	Preventive Maintenance
250	Urban	50-199	50	Estimate	N/A	9	19	15	88	Good Condition	0	7.39	Routine Maintenance
218B	Semi-Urban	200-499	350	Estimate	N/A	9	19	13	88	Good Condition	0	10.67	Routine Maintenance
254B	Semi-Urban	50-199	150	Estimate	N/A	9	18	12	88	Good Condition	0	8.91	Routine Maintenance
262B	Semi-Urban	500-999	684	Estimate	N/A	9	19	14	88	Good Condition	0	12.45	Routine Maintenance

Appendix E - Road Improvement Needs

Municipal ID	Proposed Improvement Type	Improvement Cost	Base Cost (m ²)	Condition Comments
104B.2	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$4,266.00	\$1.00	
242B	Responsive Maintenance	\$0.00	\$0.00	
107A	Responsive Maintenance	\$0.00	\$0.00	
107B	Responsive Maintenance	\$0.00	\$0.00	
107C	Responsive Maintenance	\$0.00	\$0.00	
116B	Responsive Maintenance	\$0.00	\$0.00	
138B	Responsive Maintenance	\$0.00	\$0.00	
138C	Responsive Maintenance	\$0.00	\$0.00	
093A	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$13,306.00	\$1.00	Township noted this road is usually very rough and mushy in the spring. Experiences truck traffic
093B	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$3,578.00	\$1.00	
230A.1	Responsive Maintenance	\$0.00	\$0.00	
210B.2	Responsive Maintenance	\$0.00	\$0.00	
041B	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$14,274.00	\$1.00	
022A	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$10,886.00	\$1.00	
022B	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$1,937.00	\$1.00	
024C	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$9,346.00	\$1.00	
111A	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$5,821.00	\$1.00	
111B	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$6,161.00	\$1.00	
262C	Responsive Maintenance	\$0.00	\$0.00	
054	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$48,213.00	\$1.00	Township noted they have had a petition for this road to be narrowed and full load. Generally in good shape with only a few potholes
103B	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$10,782.00	\$1.00	
105A.1	Responsive Maintenance	\$0.00	\$0.00	
256A.2	Responsive Maintenance	\$0.00	\$0.00	
073A	Responsive Maintenance	\$0.00	\$0.00	
073B	Responsive Maintenance	\$0.00	\$0.00	
066A	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$7,238.00	\$1.00	
066B	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$13,275.00	\$1.00	
260A	Responsive Maintenance	\$0.00	\$0.00	
203A	Responsive Maintenance	\$0.00	\$0.00	
254F.2	Responsive Maintenance	\$0.00	\$0.00	
250A.2	Responsive Maintenance	\$0.00	\$0.00	
016B	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$24,617.00	\$1.00	
300	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$691.00	\$1.00	
007	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$12,356.00	\$1.00	
114A	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$11,813.00	\$1.00	
229B	Responsive Maintenance	\$0.00	\$0.00	
026	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$15,770.00	\$1.00	Potential connectivity candidate. Not a troublesome section
062A	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$2,640.00	\$1.00	
116C	Responsive Maintenance	\$0.00	\$0.00	
214B.2	Responsive Maintenance	\$0.00	\$0.00	Township noted that an overlay was completed on this segment due to heavy alligator cracking
249B.1	Responsive Maintenance	\$0.00	\$0.00	
231D	Responsive Maintenance	\$0.00	\$0.00	
024B	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$14,623.00	\$1.00	
250	Responsive Maintenance	\$0.00	\$0.00	
218B	Responsive Maintenance	\$0.00	\$0.00	
254B	Responsive Maintenance	\$0.00	\$0.00	
262B	Responsive Maintenance	\$0.00	\$0.00	

Appendix E - Road Improvement Needs

Municipal ID	Asset or PSAB ID	Community	Name	Name From	Name To	Surface Material	Capital Maint. %	Boundary Road	Road Length (m)	Road Width (m)	Platform Width (m)	Surface Area (m ²)
055	228	Norwich (Township)	Maple Dell Rd.	Jones Line	Middletown Line	Gravel	100	No	2117	6.8	8.8	18630
056A	230	Norwich (Township)	Maple Dell Rd.	Middletown Line	Pick Line	Gravel	100	No	1567	6.6	7.6	11909
251	2307	Otterville	Maple St.	North St. W.	Main St. W.	High Class Bituminous	100	No	117	6.4	6.4	749
224C	2648	Norwich	Marshall Dr.	Pollard St.	Carman St.	High Class Bituminous	100	No	83	8.5	8.5	706
250A.3	2310	Otterville	North St. W.	Church St.	Maple St.	High Class Bituminous	100	No	180	6.9	6.9	1242
001	2570	Norwich (Township)	Old Highway # 2 Rd.	Highway 2	CPR	High Class Bituminous	100	Yes	546	6.2	6.2	3385
222A.1	369	Norwich	Pitcher St.	Palmer St. W.	South St.	High Class Bituminous	100	No	162	8	8	1296
222A.2	368	Norwich	Pitcher St.	South St.	Jerdon St.	High Class Bituminous	100	No	106	8	8	848
278B		Springford	Son's St.	Water St.	End	High Class Bituminous	100	No	156	8.4	8.4	1310
277C.1	453	Springford	Wood St. E.	West St.	Water St.	High Class Bituminous	100	No	157	6.4	6.4	1005
052	51	Norwich (Township)	Airport Rd.	Oxford Rd. 59	Base Line	High Class Bituminous	100	No	3603	6.6	7.6	23780
258A	270	Otterville	Albert St.	Mill St. W.	Queen St. W.	High Class Bituminous	100	No	133	6.4	6.4	851
035A.2	2580	Norwich (Township)	Beaconsfield Rd.	Vandecar Line	Muir Line	Gravel	100	No	1830	5.9	7.9	14457
255B	2364	Otterville	Cherry St.	Main St. W.	Mill St. W.	High Class Bituminous	100	No	117	6.3	6.3	737
231A	129	Norwich	Clyde St.	Brock St. W.	North Court St. W.	High Class Bituminous	100	No	177	6.5	6.5	1151
132A.2	2741	Norwich (Township)	Coal Line	Ninth Rd.	New Rd.	High Class Bituminous	100	No	1768	7	8	12376
261A	156	Otterville	Dover St.	Main St.	Mill St.	High Class Bituminous	100	No	133	6.7	6.7	891
041A	2586	Norwich (Township)	Evergreen St.	Highway 59	Slant Rd.	Gravel	100	No	2087	6	8	16696
212C	181	Norwich	Front St.	Pitcher St.	Stover St. S.	High Class Bituminous	100	No	182	7.2	10	1310
088	186	Norwich (Township)	Greenly Line	Pattullo Ave	Highway 59	High Class Bituminous	100	No	363	7.2	7.2	2614
250B	2308	Otterville	Grove St.	North St. W.	Main St. W.	High Class Bituminous	100	No	117	6.5	6.5	761
218A	207	Norwich	Jerdon St	Pitcher St	Otter St	High Class Bituminous	100	No	87	7.5	7.5	653
224A	2646	Norwich	Marshall Dr.	Carroll St.	End (Cul-de-Sac)	High Class Bituminous	100	No	93	8.5	8.5	791
224D	2645	Norwich	Marshall Dr.	Carman St.	Cayley St.	High Class Bituminous	100	No	218	8.6	8.6	1875
090A	260	Norwich (Township)	Middletown Line	Pattullo Ave	300m N. of Oxford Centre Rd.	High Class Bituminous	100	No	1116	6.9	8.9	7700
105A.2	2320	Norwich (Township)	Middletown Line	Evergreen St.	Quaker St.	High Class Bituminous	100	No	1601	6.8	8.8	10887
255C.1	2367	Otterville	Mill St. W.	Cherry St.	Pine St.	High Class Bituminous	100	No	142	6.5	6.5	923
255C.2	2629	Otterville	Mill St. W.	Pine St.	Otter View Dr	High Class Bituminous	100	No	182	8.2	8.2	1492
235B.1	325	Norwich	North St. W.	Washington St.	Stover St. N.	High Class Bituminous	100	No	125	6.6	6.6	825
020A	2575	Norwich (Township)	Old Stage Rd.	Oxford Rd. 14	Vandecar Line	Gravel	100	No	1424	6.4	7.4	10538
020B	2574	Norwich (Township)	Old Stage Rd.	Vanecar Line	Muir Line	Gravel	100	No	2479	6.4	7.4	18345
265A	2627	Otterville	Otter View Dr	Main St. W.	Mill St. W.	High Class Bituminous	100	No	166	8.5	8.5	1411
047	381	Norwich (Township)	Quaker St.	Slant Rd.	Base Line	Gravel	100	No	3048	6.7	8.7	26518
229D	407	Norwich	Spring St.	Elgin St.	Main St. W.	High Class Bituminous	100	No	149	6.3	6.3	939
295	425	Norwich (Township)	Union Line	South of New Rd.	End	Gravel	100	No	198	3.3	3.3	653.4
100A	431	Norwich (Township)	Vandecar Line	Gunn's Hill Rd.	Substation Rd.	Gravel	100	No	1389	4.6	5.6	7778
277D.2	445	Springford	Water St.	Wood St.	Son's St.	High Class Bituminous	100	No	111	6.3	6.3	699
254E	2566	Otterville	York St.	North St. E.	Main St. E.	High Class Bituminous	100	No	121	7.1	7.1	859
246	2638	Norwich	Bailey St.	Spring St.	Centre St.	High Class Bituminous	100	No	100	8.5	8.5	850
116A	76	Norwich (Township)	Base Line	Norwich Rd.	Caley Rd.	High Class Bituminous	100	No	822	7.2	8.2	5918
116D	80	Norwich (Township)	Base Line	Maple Dell Rd.	Milldale Rd.	High Class Bituminous	100	No	1618	7.2	8.2	11650
033B	2576	Norwich (Township)	Beaconsfield Rd.	299m E. of Middletown Line	Middletown Line	High Class Bituminous	100	No	298	7.2	7.2	2146
034A	2375	Norwich (Township)	Beaconsfield Rd.	Middletown Line	Middletown Line	High Class Bituminous	100	No	91	7.2	7.2	655
048A	2589	Norwich (Township)	Caley Rd.	Hanmer Line	Base Line	Gravel	100	No	873	5.8	6.8	5936
214A.1	102	Norwich	Carman St.	Pitcher St.	Otter St.	High Class Bituminous	100	No	85	7	7	595
254D	2283	Otterville	Cedar St.	North St. E.	Main St. E.	High Class Bituminous	100	No	119	6.1	6.1	726
231C	128	Norwich	Clyde St.	South Court St. W.	Elgin St. W.	High Class Bituminous	100	No	166	6.7	6.7	1112
261B	151	Otterville	Dover St.	Mill St.	Queen St.	High Class Bituminous	100	No	142	6.7	6.7	951

Appendix E - Road Improvement Needs

Municipal ID	Roadside Environment	AADT Range	AADT	AADT Method	AADT Year	Ride Comfort Rating (RCR)	Structural Adequacy (1-20)	Drainage Deficiency Rating (1-10)	PCI / GCR	Condition Rating Class	Priority Guide Number (PGN)	Priority Rating (PR)	Proposed Lifecycle Improvement
055	Rural	50-199	94	Actual Count	2023	8	18	13	88	Good Condition	0	8.17	Preventive Maintenance
056A	Rural	50-199	83	Actual Count	2023	8	18	13	88	Good Condition	0	7.99	Preventive Maintenance
251	Semi-Urban	50-199	65	Estimate	N/A	9	18	13	88	Good Condition	0	7.68	Routine Maintenance
224C	Urban	200-499	250	Estimate	N/A	9	18	14	88	Good Condition	0	9.9	Routine Maintenance
250A.3	Semi-Urban	50-199	60	Estimate	N/A	9	18	14	88	Good Condition	0	7.59	Routine Maintenance
001	Rural	0-49	30	Estimate	N/A	8	19	15	88	Good Condition	0	6.94	Routine Maintenance
222A.1	Semi-Urban	200-499	350	Estimate	N/A	9	19	14	88	Good Condition	0	10.67	Routine Maintenance
222A.2	Semi-Urban	200-499	350	Estimate	N/A	9	19	14	88	Good Condition	0	10.67	Routine Maintenance
278B	Semi-Urban	0-49	25	Estimate	N/A	9	18	15	88	Good Condition	0	6.81	Routine Maintenance
277C.1	Semi-Urban	0-49	20	Estimate	N/A	9	18	15	88	Good Condition	0	6.68	Routine Maintenance
052	Rural	1000-1999	1247	Actual Count	2022	9	18	14	89	Good Condition	0	13.18	Routine Maintenance
258A	Semi-Urban	0-49	40	Estimate	N/A	9	19	14	89	Good Condition	0	6.58	Routine Maintenance
035A.2	Rural	50-199	59	Actual Count	2023	7	18	14	89	Good Condition	0	6.94	Preventive Maintenance
255B	Semi-Urban	0-49	35	Estimate	N/A	9	19	14	89	Good Condition	0	6.47	Routine Maintenance
231A	Semi-Urban	200-499	303	Estimate	N/A	9	19	15	89	Good Condition	0	9.47	Routine Maintenance
132A.2	Rural	500-999	660	Actual Count	2023	9	19	14	89	Good Condition	0	11.32	Routine Maintenance
261A	Semi-Urban	500-999	815	Estimate	N/A	9	19	14	89	Good Condition	0	11.9	Routine Maintenance
041A	Rural	50-199	61	Actual Count	2022	7	18	14	89	Good Condition	0	6.97	Preventive Maintenance
212C	Urban	200-499	350	Estimate	N/A	9	19	14	89	Good Condition	0	9.78	Routine Maintenance
088	Semi-Urban	200-499	315	Actual Count	2023	9	20	15	89	Good Condition	0	9.55	Routine Maintenance
250B	Semi-Urban	50-199	55	Estimate	N/A	9	19	13	89	Good Condition	0	6.87	Routine Maintenance
218A	Semi-Urban	200-499	350	Estimate	N/A	9	19	14	89	Good Condition	0	9.78	Routine Maintenance
224A	Urban	200-499	250	Estimate	N/A	9	18	14	89	Good Condition	0	9.08	Routine Maintenance
224D	Urban	200-499	250	Estimate	N/A	9	18	14	89	Good Condition	0	9.08	Routine Maintenance
090A	Rural	1000-1999	1063	Actual Count	2023	9	20	15	89	Good Condition	0	12.68	Routine Maintenance
105A.2	Rural	1000-1999	1545	Actual Count	2022	9	20	15	89	Good Condition	0	13.88	Routine Maintenance
255C.1	Semi-Urban	0-49	40	Estimate	N/A	9	18	12	89	Good Condition	0	6.58	Routine Maintenance
255C.2	Urban	50-199	65	Estimate	N/A	9	19	14	89	Good Condition	0	7.04	Routine Maintenance
235B.1	Urban	50-199	100	Estimate	N/A	9	19	15	89	Good Condition	0	7.57	Routine Maintenance
020A	Rural	50-199	65	Actual Count	2023	7	18	14	89	Good Condition	0	7.04	Preventive Maintenance
020B	Rural	50-199	65	Actual Count	2023	7	18	14	89	Good Condition	0	7.04	Preventive Maintenance
265A	Urban	50-199	140	Estimate	N/A	9	19	14	89	Good Condition	0	8.06	Routine Maintenance
047	Rural	0-49	42	Actual Count	2023	7	18	14	89	Good Condition	0	6.62	Preventive Maintenance
229D	Semi-Urban	200-499	300	Estimate	N/A	9	19	15	89	Good Condition	0	9.45	Routine Maintenance
295	Rural	0-49	10	Estimate	N/A	7	18	14	89	Good Condition	0	0	Not Calculated
100A	Rural	0-49	24	Actual Count	2023	7	18	14	89	Good Condition	0	6.22	Preventive Maintenance
277D.2	Semi-Urban	0-49	18	Estimate	N/A	9	18	15	89	Good Condition	0	6.07	Routine Maintenance
254E	Semi-Urban	50-199	150	Estimate	N/A	8	18	13	89	Good Condition	0	8.17	Routine Maintenance
246	Semi-Urban	50-199	100	Estimate	N/A	9	19	15	90	Good Condition	0	6.88	Routine Maintenance
116A	Rural	500-999	909	Actual Count	2022	9	19	15	90	Good Condition	0	11.1	Routine Maintenance
116D	Rural	500-999	928	Actual Count	2023	9	19	15	90	Good Condition	0	11.16	Routine Maintenance
033B	Rural	50-199	128	Actual Count	2023	9	19	14	90	Good Condition	0	7.2	Routine Maintenance
034A	Rural	50-199	90	Actual Count	2023	9	19	14	90	Good Condition	0	6.75	Routine Maintenance
048A	Rural	50-199	53	Actual Count	2023	8	18	14	90	Good Condition	0	6.21	Preventive Maintenance
214A.1	Semi-Urban	200-499	350	Estimate	N/A	9	19	13	90	Good Condition	0	8.89	Routine Maintenance
254D	Rural	50-199	75	Estimate	N/A	9	19	13	90	Good Condition	0	6.55	Routine Maintenance
231C	Semi-Urban	200-499	303	Estimate	N/A	9	19	15	90	Good Condition	0	8.61	Routine Maintenance
261B	Semi-Urban	500-999	815	Estimate	N/A	9	19	14	90	Good Condition	0	10.81	Routine Maintenance

Appendix E - Road Improvement Needs

Municipal ID	Proposed Improvement Type	Improvement Cost	Base Cost (m ²)	Condition Comments
055	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$18,630.00	\$1.00	
056A	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$11,909.00	\$1.00	
251	Responsive Maintenance	\$0.00	\$0.00	
224C	Responsive Maintenance	\$0.00	\$0.00	
250A.3	Responsive Maintenance	\$0.00	\$0.00	
001	Responsive Maintenance	\$0.00	\$0.00	FibreMat has been completed on this section
222A.1	Responsive Maintenance	\$0.00	\$0.00	
222A.2	Responsive Maintenance	\$0.00	\$0.00	
278B	Responsive Maintenance	\$0.00	\$0.00	
277C.1	Responsive Maintenance	\$0.00	\$0.00	
052	Responsive Maintenance	\$0.00	\$0.00	The west end of this segment (by TimHortons) has some edge breakup
258A	Responsive Maintenance	\$0.00	\$0.00	
035A.2	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$14,457.00	\$1.00	
255B	Responsive Maintenance	\$0.00	\$0.00	
231A	Responsive Maintenance	\$0.00	\$0.00	
132A.2	Responsive Maintenance	\$0.00	\$0.00	Few potholes and minor edge cracking. FibreMat has been completed on this section
261A	Responsive Maintenance	\$0.00	\$0.00	
041A	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$16,696.00	\$1.00	
212C	Responsive Maintenance	\$0.00	\$0.00	Paved shoulder/parking lane
088	Responsive Maintenance	\$0.00	\$0.00	
250B	Responsive Maintenance	\$0.00	\$0.00	
218A	Responsive Maintenance	\$0.00	\$0.00	
224A	Responsive Maintenance	\$0.00	\$0.00	
224D	Responsive Maintenance	\$0.00	\$0.00	
090A	Responsive Maintenance	\$0.00	\$0.00	
105A.2	Responsive Maintenance	\$0.00	\$0.00	
255C.1	Responsive Maintenance	\$0.00	\$0.00	
255C.2	Responsive Maintenance	\$0.00	\$0.00	
235B.1	Responsive Maintenance	\$0.00	\$0.00	
020A	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$10,538.00	\$1.00	
020B	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$18,345.00	\$1.00	
265A	Responsive Maintenance	\$0.00	\$0.00	
047	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$26,518.00	\$1.00	Dug out and prepared for conversion a few years ago. A good candidate for conversion due to connectivity
229D	Responsive Maintenance	\$0.00	\$0.00	
295	Not Calculated	\$0.00		Basically a private laneway
100A	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$7,778.00	\$1.00	
277D.2	Responsive Maintenance	\$0.00	\$0.00	
254E	Responsive Maintenance	\$0.00	\$0.00	
246	Responsive Maintenance	\$0.00	\$0.00	
116A	Responsive Maintenance	\$0.00	\$0.00	
116D	Responsive Maintenance	\$0.00	\$0.00	
033B	Responsive Maintenance	\$0.00	\$0.00	
034A	Responsive Maintenance	\$0.00	\$0.00	
048A	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$5,936.00	\$1.00	
214A.1	Responsive Maintenance	\$0.00	\$0.00	
254D	Responsive Maintenance	\$0.00	\$0.00	
231C	Responsive Maintenance	\$0.00	\$0.00	
261B	Responsive Maintenance	\$0.00	\$0.00	

Appendix E - Road Improvement Needs

Municipal ID	Asset or PSAB ID	Community	Name	Name From	Name To	Surface Material	Capital Maint. %	Boundary Road	Road Length (m)	Road Width (m)	Platform Width (m)	Surface Area (m ²)
261F	152	Norwich (Township)	Dover St.	John St. S.	Cornell Rd.	High Class Bituminous	100	No	398	6.8	7.4	2706
017	176	Norwich (Township)	Firehall Rd.	Highway 59	Middletown Line	Gravel	100	No	3638	5	6	21828
019A	175	Norwich (Township)	Firehall Rd.	Middletown Line	Old 14 Line	Gravel	100	No	3397	6.2	8.2	27855
019B	177	Norwich (Township)	Firehall Rd.	Old 14 Line	Oxford Rd. 14	Gravel	100	No	296	6.2	8.2	2427
023	191	Norwich (Township)	Gunn's Hill Rd.	Highway 59	Middletown Line	Gravel	100	No	3352	5.8	7.8	26146
025C	188	Norwich (Township)	Gunn's Hill Rd.	Vandecar Line	Muir Line	Gravel	100	No	2130	6.3	7.3	15549
205	237	Norwich	Mary St.	Spring St.	Centre St.	High Class Bituminous	100	No	101	6.4	6.4	646
103A	239	Norwich (Township)	McCready Line	Beaconsfield Rd.	Highway 59	Gravel	100	No	1677	5.4	6.4	10733
099B	264	Norwich (Township)	Middletown Line	Substation Rd.	Beaconsfield Rd.	High Class Bituminous	100	No	1870	7.2	8.6	13464
109	261	Norwich (Township)	Middletown Line	Airport Rd.	Maple Dell Rd.	High Class Bituminous	100	No	1725	7.1	8.1	12248
119A	2610	Norwich (Township)	Middletown Line	Maple Dell Rd.	Milldale Rd.	High Class Bituminous	100	No	1638	7.1	8.1	11630
119B	254	Norwich (Township)	Middletown Line	Milldale Rd.	Otterville Rd. (Oxford Rd. 19)	High Class Bituminous	100	No	1634	7.4	8.4	12092
069	296	Norwich (Township)	Ninth Rd.	E. of Base Line	Township Boundary	Gravel	100	No	1146	5.5	7.5	8595
203B.3	312	Norwich	North Court St. W.	Washington St.	Stover St. N.	High Class Bituminous	100	No	126	6.2	6.2	781
250A.1	2311	Otterville	North St. W.	Grove St.	End	High Class Bituminous	100	No	139	6.4	6.4	890
144	329	Norwich (Township)	Oatman Line	Ninth Rd.	Cornell Rd.	Gravel	100	No	554	3.5	3.5	1939
143	333	Norwich (Township)	Old School Line	Highway 59	Gunn's Hill Rd.	Gravel	100	No	344	5.5	6.5	2236
016A	2338	Norwich (Township)	Old Stage Rd.	Middletown Line	480m E. of Middletown Line	High Class Bituminous	100	No	489	6.5	6.5	3179
016C	338	Norwich (Township)	Old Stage Rd.	Old 14 Line	Oxford Rd. 14	High Class Bituminous	100	No	271	7	8	1897
097A	341	Norwich (Township)	Oriel Line	Curries Rd.	Gunn's Hill Rd.	Gravel	100	No	1292	4.2	4.2	5426
097B	342	Norwich (Township)	Oriel Line	Gunn's Hill Rd.	Substation Rd.	Gravel	100	No	1380	5.3	5.3	7314
265B	2628	Otterville	Otter View Dr	Mill St. W.	Van Parys Dr.	High Class Bituminous	100	No	175	8.7	8.7	1522
013A	349	Norwich (Township)	Oxford Centre Rd.	W. of Middletown Line	Not Recorded	Gravel	100	No	838	4.7	4.7	3939
014A	348	Norwich (Township)	Oxford Centre Rd.	0.34km E. of Middletown Line	Old 14 Line	Gravel	100	No	3019	5.4	6.4	19322
014B	351	Norwich (Township)	Oxford Centre Rd.	Old 14 Line	Oxford Rd. 14	Gravel	100	No	294	5.4	6.4	1882
015	350	Norwich (Township)	Oxford Centre Rd.	Oxford Rd. 14	Highway 53	Gravel	100	No	3511	5.7	6.7	23524
298		Norwich (Township)	Oxford Rd. 14	Oxford Rd. 14	Curries Rd.	Gravel	100	No	123	6.4	7.4	910
114B	366	Norwich (Township)	Pick Line	Airport Rd.	Maple Dell Rd.	Gravel	100	No	1707	6.2	7.2	12290
255A	2365	Otterville	Pine St.	Main St. W.	Mill St. W.	High Class Bituminous	100	No	121	6	6	726
222D	372	Norwich	Pitcher St.	Front St.	Tidey St.	High Class Bituminous	100	No	60	10.6	10.6	636
266	2626	Otterville	River Oaks Dr	Dover St.	End (Cul-de-Sac)	High Class Bituminous	100	No	386	8.6	8.6	3320
278A	2370	Springford	Son's St.	West St. S. (Oxford Rd. 13)	Water St.	High Class Bituminous	100	No	156	6.6	6.6	1030
207B.1	396	Norwich	South Court St. E.	Albert St.	Victoria St.	High Class Bituminous	100	No	75	6.7	10.7	503
217B	405	Norwich	South St.	Otter St.	Stover St. S.	High Class Bituminous	100	No	99	7	7	693
229A	2643	Norwich	Spring St.	Bailey St.	End	High Class Bituminous	100	No	176	8.5	8.5	1496
245	2563	Norwich	Union St.	Stover St. S.	End	Gravel	100	No	91	6	8	728
095B	428	Norwich (Township)	Vandecar Line	Curries Rd.	Gunn's Hill Rd.	Gravel	100	No	1250	4.5	5.5	6875
259A	447	Otterville	Wellington St. W.	Albert St.	End	High Class Bituminous	100	No	101	6.3	6.3	636
277C.2	454	Springford	Wood St. E.	Water St.	End	High Class Bituminous	100	No	117	6.5	6.5	761
238D	57	Norwich	Albert St.	Brock St. E.	North Court St. E.	High Class Bituminous	100	No	178	6.6	6.6	1175
107F	75	Norwich (Township)	Base Line	Quaker St.	13th Concession Rd.	High Class Bituminous	100	No	276	7.2	9.2	1987
107G	69	Norwich (Township)	Base Line	13th Conc Line	Norwich Rd.	High Class Bituminous	100	No	1348	7.2	9.2	9706
202A.2	97	Norwich	Brock St. E	Albert St.	Victoria St.	High Class Bituminous	100	No	78	6.4	6.4	499
214A.2	101	Norwich	Carman St.	Otter St.	Stover St. S.	High Class Bituminous	100	No	99	7	7	693
230B.2	118	Norwich	Centre St.	Mary St.	Elgin St.	High Class Bituminous	100	No	158	6.9	6.9	1090
070	140	Norwich (Township)	Cornell Rd.	Oxford Rd. 13	Oatman Line	High Class Bituminous	100	No	1078	7.2	8.2	7762
072A	139	Norwich (Township)	Cornell Rd.	Middletown Line	Furnace Rd.	High Class Bituminous	100	No	1419	7	8	9933
261E	153	Otterville	Dover St.	Norfolk St.	John St. S.	High Class Bituminous	100	No	390	6.7	6.7	2613

Appendix E - Road Improvement Needs

Municipal ID	Roadside Environment	AADT Range	AADT	AADT Method	AADT Year	Ride Comfort Rating (RCR)	Structural Adequacy (1-20)	Drainage Deficiency Rating (1-10)	PCI / GCR	Condition Rating Class	Priority Guide Number (PGN)	Priority Rating (PR)	Proposed Lifecycle Improvement
261F	Semi-Urban	500-999	815	Estimate	N/A	9	19	14	90	Good Condition	0	10.81	Routine Maintenance
017	Rural	0-49	32	Actual Count	2023	8	18	14	90	Good Condition	0	5.83	Preventive Maintenance
019A	Rural	0-49	37	Actual Count	2023	8	18	14	90	Good Condition	0	5.92	Preventive Maintenance
019B	Rural	0-49	37	Actual Count	2023	8	18	14	90	Good Condition	0	5.92	Preventive Maintenance
023	Rural	50-199	148	Actual Count	2022	8	18	14	90	Good Condition	0	7.41	Preventive Maintenance
025C	Rural	50-199	61	Actual Count	2022	8	18	14	90	Good Condition	0	6.34	Preventive Maintenance
205	Semi-Urban	50-199	100	Estimate	N/A	9	19	15	90	Good Condition	0	6.88	Routine Maintenance
103A	Rural	0-49	27	Estimate	N/A	8	18	14	90	Good Condition	0	5.72	Preventive Maintenance
099B	Rural	1000-1999	1075	Actual Count	2023	9	19	14	90	Good Condition	0	11.56	Routine Maintenance
109	Rural	2000-2999	2542	Actual Count	2023	9	20	15	90	Good Condition	0	14.26	Routine Maintenance
119A	Rural	2000-2999	2133	Actual Count	2023	9	20	15	90	Good Condition	0	13.66	Routine Maintenance
119B	Rural	2000-2999	2133	Actual Count	2023	9	20	15	90	Good Condition	0	13.66	Routine Maintenance
069	Rural	50-199	52	Actual Count	2023	8	18	14	90	Good Condition	0	6.19	Preventive Maintenance
203B.3	Semi-Urban	200-499	390	Estimate	N/A	9	18	15	90	Good Condition	0	9.11	Routine Maintenance
250A.1	Semi-Urban	50-199	50	Estimate	N/A	9	19	13	90	Good Condition	0	6.16	Routine Maintenance
144	Rural	0-49	7	Actual Count	2022	8	18	14	90	Good Condition	0	5.24	Preventive Maintenance
143	Rural	50-199	97	Estimate	N/A	8	18	14	90	Good Condition	0	6.84	Preventive Maintenance
016A	Semi-Urban	50-199	178	Actual Count	2023	9	19	15	90	Good Condition	0	7.69	Routine Maintenance
016C	Rural	50-199	86	Estimate	N/A	9	20	15	90	Good Condition	0	6.7	Routine Maintenance
097A	Rural	0-49	18	Actual Count	2023	8	18	14	90	Good Condition	0	5.52	Preventive Maintenance
097B	Rural	0-49	18	Actual Count	2023	8	18	14	90	Good Condition	0	5.52	Preventive Maintenance
265B	Urban	50-199	115	Estimate	N/A	9	19	14	90	Good Condition	0	7.06	Routine Maintenance
013A	Rural	0-49	13	Actual Count	2023	8	18	14	90	Good Condition	0	5.4	Preventive Maintenance
014A	Rural	0-49	27	Actual Count	2023	8	18	14	90	Good Condition	0	5.72	Preventive Maintenance
014B	Rural	0-49	27	Actual Count	2023	8	18	14	90	Good Condition	0	5.72	Preventive Maintenance
015	Rural	0-49	23	Actual Count	2023	8	18	14	90	Good Condition	0	5.63	Preventive Maintenance
298	Rural	0-49	15	Estimate	N/A	8	18	14	90	Good Condition	0	5.45	Preventive Maintenance
114B	Rural	50-199	113	Actual Count	2023	8	18	14	90	Good Condition	0	7.03	Preventive Maintenance
255A	Semi-Urban	0-49	30	Estimate	N/A	9	18	13	90	Good Condition	0	5.79	Routine Maintenance
222D	Semi-Urban	200-499	350	Estimate	N/A	9	19	13	90	Good Condition	0	8.89	Routine Maintenance
266	Urban	50-199	75	Estimate	N/A	9	19	14	90	Good Condition	0	6.55	Routine Maintenance
278A	Semi-Urban	0-49	40	Estimate	N/A	9	19	15	90	Good Condition	0	5.98	Routine Maintenance
207B.1	Semi-Urban	200-499	350	Estimate	N/A	9	18	15	90	Good Condition	0	8.89	Routine Maintenance
217B	Semi-Urban	200-499	250	Estimate	N/A	9	19	15	90	Good Condition	0	8.25	Routine Maintenance
229A	Urban	0-49	35	Estimate	N/A	9	19	15	90	Good Condition	0	5.89	Routine Maintenance
245	Semi-Urban	0-49	10	Estimate	N/A	8	18	14	90	Good Condition	0	5.32	Preventive Maintenance
095B	Rural	0-49	9	Actual Count	2023	8	18	14	90	Good Condition	0	5.29	Preventive Maintenance
259A	Semi-Urban	0-49	35	Estimate	N/A	9	19	14	90	Good Condition	0	5.89	Routine Maintenance
277C.2	Semi-Urban	0-49	15	Estimate	N/A	9	19	15	90	Good Condition	0	5.45	Routine Maintenance
238D	Urban	200-499	250	Estimate	N/A	9	19	15	91	Good Condition	0	7.43	Routine Maintenance
107F	Rural	500-999	909	Actual Count	2022	9	19	15	91	Good Condition	0	9.99	Routine Maintenance
107G	Rural	500-999	909	Actual Count	2022	9	20	15	91	Good Condition	0	9.99	Routine Maintenance
202A.2	Semi-Urban	200-499	300	Estimate	N/A	8	18	15	91	Good Condition	0	7.73	Routine Maintenance
214A.2	Semi-Urban	200-499	350	Estimate	N/A	9	19	13	91	Good Condition	0	8	Routine Maintenance
230B.2	Semi-Urban	200-499	392	Estimate	N/A	9	19	15	91	Good Condition	0	8.21	Routine Maintenance
070	Rural	1000-1999	1553	Actual Count	2022	9	20	15	91	Good Condition	0	11.37	Routine Maintenance
072A	Rural	1000-1999	1029	Actual Count	2022	9	20	15	91	Good Condition	0	10.29	Routine Maintenance
261E	Semi-Urban	500-999	815	Estimate	N/A	9	19	14	91	Good Condition	0	9.73	Routine Maintenance

Appendix E - Road Improvement Needs

Municipal ID	Proposed Improvement Type	Improvement Cost	Base Cost (m ²)	Condition Comments
261F	Responsive Maintenance	\$0.00	\$0.00	
017	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$21,828.00	\$1.00	
019A	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$27,855.00	\$1.00	
019B	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$2,427.00	\$1.00	
023	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$26,146.00	\$1.00	
025C	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$15,549.00	\$1.00	
205	Responsive Maintenance	\$0.00	\$0.00	
103A	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$10,733.00	\$1.00	
099B	Responsive Maintenance	\$0.00	\$0.00	
109	Responsive Maintenance	\$0.00	\$0.00	Small gravel shoulders, but the gravel seems to disappear into the ditch as its on the slope
119A	Responsive Maintenance	\$0.00	\$0.00	Small gravel shoulders
119B	Responsive Maintenance	\$0.00	\$0.00	
069	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$8,595.00	\$1.00	Pulverized and returned to gravel a few years ago
203B.3	Responsive Maintenance	\$0.00	\$0.00	
250A.1	Responsive Maintenance	\$0.00	\$0.00	
144	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$1,939.00	\$1.00	
143	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$2,236.00	\$1.00	
016A	Responsive Maintenance	\$0.00	\$0.00	Scheduled for an overlay this year (2023)
016C	Responsive Maintenance	\$0.00	\$0.00	
097A	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$5,426.00	\$1.00	
097B	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$7,314.00	\$1.00	
265B	Responsive Maintenance	\$0.00	\$0.00	
013A	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$3,939.00	\$1.00	
014A	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$19,322.00	\$1.00	
014B	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$1,882.00	\$1.00	
015	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$23,524.00	\$1.00	Was re-gravelled and got a good crown. Only required minimal grading last year (2023)
298	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$910.00	\$1.00	
114B	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$12,290.00	\$1.00	
255A	Responsive Maintenance	\$0.00	\$0.00	
222D	Responsive Maintenance	\$0.00	\$0.00	
266	Responsive Maintenance	\$0.00	\$0.00	
278A	Responsive Maintenance	\$0.00	\$0.00	
207B.1	Responsive Maintenance	\$0.00	\$0.00	Hydro poles are within the pavement limits
217B	Responsive Maintenance	\$0.00	\$0.00	Tree trimming is required, stop sign is obstructed
229A	Responsive Maintenance	\$0.00	\$0.00	
245	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$728.00	\$1.00	
095B	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$6,875.00	\$1.00	Grading at the time of inspection
259A	Responsive Maintenance	\$0.00	\$0.00	
277C.2	Responsive Maintenance	\$0.00	\$0.00	Drain and road work proposed for 2024, to be upgraded to urban cross section (developer funding for a portion)
238D	Responsive Maintenance	\$0.00	\$0.00	
107F	Responsive Maintenance	\$0.00	\$0.00	
107G	Responsive Maintenance	\$0.00	\$0.00	
202A.2	Responsive Maintenance	\$0.00	\$0.00	
214A.2	Responsive Maintenance	\$0.00	\$0.00	
230B.2	Responsive Maintenance	\$0.00	\$0.00	
070	Responsive Maintenance	\$0.00	\$0.00	
072A	Responsive Maintenance	\$0.00	\$0.00	
261E	Responsive Maintenance	\$0.00	\$0.00	

Appendix E - Road Improvement Needs

Municipal ID	Asset or PSAB ID	Community	Name	Name From	Name To	Surface Material	Capital Maint. %	Boundary Road	Road Length (m)	Road Width (m)	Platform Width (m)	Surface Area (m ²)
220C		Norwich	Dufferin St.	South St.	Sunview Dr.	High Class Bituminous	100	No	244	6.6	6.6	1610
233	2641	Norwich	John St.	Elgin St. W.	Main St. W.	High Class Bituminous	100	No	150	6.7	6.7	1005
146	218	Norwich (Township)	Jones Line	Oxford Rd. 13	Maple Dell Rd.	Gravel	100	No	270	5	6	1620
272B	240	Burgessville	McNab St.	100m E. of Middletown Line	Nichol Lane	High Class Bituminous	100	No	145	6.7	6.7	972
272C	241	Burgessville	McNab St.	Nichol Lane	Smith's Lane	High Class Bituminous	100	No	224	6.7	6.7	1501
105B.2	256	Norwich (Township)	Middletown Line	Norwich Rd.	Airport Rd.	High Class Bituminous	100	No	1543	7.3	8.3	11264
132	245	Norwich (Township)	Middletown Line	Curries Rd.	Gunn's Hill Rd.	High Class Bituminous	100	No	1326	7.3	9.3	9680
270	252	Burgessville	Middletown Line	McNab St.	Church St. W.	High Class Bituminous	100	No	181	6.6	7.6	1195
062C	330	Norwich (Township)	Oddy Rd.	E. of Highway 59	End	Gravel	100	No	315	4.2	4.2	1323
011A	2573	Norwich (Township)	Old Stage Rd.	Middletown Line	320m W. of Middletown Line	High Class Bituminous	100	No	321	7.2	7.2	2311
256C.3	384	Otterville	Queen St. E	Oxford St.	John St. S.	High Class Bituminous	100	No	117	6.4	6.4	749
256C.1	383	Otterville	Queen St. W	Albert St.	Dover St.	High Class Bituminous	100	No	174	6.4	6.4	1114
259C	446	Otterville	Wellington St. E.	Dover St.	John St. S.	High Class Bituminous	100	No	236	6.4	6.4	1510
259B	448	Otterville	Wellington St. W.	Albert St.	Dover St.	High Class Bituminous	100	No	175	6.2	6.2	1085
238C	55	Norwich	Albert St.	North St. E.	Brock St. E.	High Class Bituminous	100	No	176	6.8	6.8	1197
202A.1	96	Norwich	Brock St. E	Stover St. N.	Albert St.	High Class Bituminous	100	No	72	6.4	6.4	461
231B	130	Norwich	Clyde St.	North Court St. W.	South Court St. W.	High Class Bituminous	100	No	81	6.6	6.6	535
071	138	Norwich (Township)	Cornell Rd.	Oatman Line	Middletown Line	High Class Bituminous	100	No	2650	7.2	8.7	19080
275A	149	Burgessville	Deere Cres.	Snyder Court	Church St. W.	High Class Bituminous	100	No	153	8.9	11.9	1362
275B	148	Burgessville	Deere Cres.	Church St. W.	Snyder Court	High Class Bituminous	100	No	599	8.9	8.9	5331
261C	155	Otterville	Dover St.	Queen St.	Wellington St.	High Class Bituminous	100	No	137	6.7	6.7	918
261D	154	Otterville	Dover St.	Wellington St.	Norfolk St.	High Class Bituminous	100	No	73	7.1	7.1	518
280	160	Norwich (Township)	East St. (Eastwood)	Highway 2	Highway 53	High Class Bituminous	100	No	330	7.6	7.6	2508
025A	198	Norwich (Township)	Gunn's Hill Rd.	Oxford Rd. 14	Vandecar Line	Gravel	100	No	1311	6.3	7.3	9570
025B	199	Norwich (Township)	Gunn's Hill Rd.	Vandecar Line	Vandecar Line	Gravel	100	No	286	6.3	7.3	2088
090B		Norwich (Township)	Middletown Line	Oxford Centre Rd.	300m N. of Oxford Centre Rd.	High Class Bituminous	100	No	305	7.2	9.2	2196
091C		Norwich (Township)	Middletown Line	335m S. of Old Stage Rd.	Firehall Rd.	High Class Bituminous	100	No	499	7	9	3493
099A	248	Norwich (Township)	Middletown Line	Gunn's Hill Rd.	Substation Rd.	High Class Bituminous	100	No	1374	7.3	9.3	10030
271	2551	Burgessville	Middletown Line	Church St.	387m S. of Church St.	High Class Bituminous	100	No	387	6.8	6.8	2632
256B	266	Otterville	Mill St. W.	Albert St.	Dover St.	High Class Bituminous	100	No	169	6.3	6.3	1065
009	334	Norwich (Township)	Old Stage Rd.	Sweaburg Rd. (Oxford Rd 12)	Horn Rd.	High Class Bituminous	100	No	988	7	8.6	6916
010	337	Norwich (Township)	Old Stage Rd.	Horn Rd.	Highway 59	High Class Bituminous	100	No	1021	7	8	7147
299		Norwich (Township)	Oxford Rd. 14	Oxford Rd. 14	Gunn's Hill Rd.	Gravel	100	No	97	6.3	7.3	708
244	352	Norwich	Palmer St. E.	Stover St. S.	End (Cul-de-Sac)	High Class Bituminous	100	No	231	8.4	8.4	1940
256C.2	382	Otterville	Queen St. E.	Dover St.	Oxford St.	High Class Bituminous	100	No	119	6.2	6.2	738
062B	2560	Norwich (Township)	Seventh Rd.	Highway 59	End	Low Class Bituminous	100	No	120	5.9	5.9	708
276	394	Burgessville	Snyder Court	Deere Cres.	End (Cul-de-Sac)	High Class Bituminous	100	No	126	8.8	10.8	1109
207B.2	398	Norwich	South Court St. E.	Victoria St.	Cook St.	High Class Bituminous	100	No	90	7.3	7.3	657
228A	2644	Norwich	Sutton St.	Main St. E.	End	High Class Bituminous	100	No	91	7	7	637
236A	437	Norwich	Washington St.	Brock St. W.	North Court St. W.	High Class Bituminous	100	No	175	6.6	6.6	1155
236B	443	Norwich	Washington St.	North Court St. W.	South Court St. W.	High Class Bituminous	100	No	80	6.6	6.6	528
277D.1	444	Springford	Water St.	Main St.	Wood St.	High Class Bituminous	100	No	132	6.2	6.2	818
053	2591	Norwich (Township)	Airport Rd.	Base Line	Windham Line	High Class Bituminous	100	No	690	6.6	7.6	4554
258B	272	Otterville	Albert St.	Queen St. W.	Wellington St. W.	High Class Bituminous	100	No	137	6.4	6.4	877
202B	95	Norwich	Brock St. E	Victoria St.	Poldon Dr.	High Class Bituminous	100	No	81	8.6	8.6	697
277A	127	Springford	Church St.	Main St	Wood St. W.	High Class Bituminous	100	No	122	6.2	6.2	756
072B	142	Norwich (Township)	Cornell Rd.	Ninth Rd.	Furnace Rd.	High Class Bituminous	100	No	709	7	8	4963
072C	141	Norwich (Township)	Cornell Rd.	Dover St.	Ninth Rd.	High Class Bituminous	100	No	513	7	7	3591
024A		Norwich (Township)	Gunn's Hill Rd.	30m W. of Middletown Line	30m E. of Middletown Line	High Class Bituminous	100	No	356	7.1	9.1	2528
247B	2637	Norwich	Lossing Dr.	Poldon Dr.	Lossing Dr.	High Class Bituminous	100	No	99	8.6	8.6	851
091A	259	Norwich (Township)	Middletown Line	Oxford Centre Rd.	Old Stage Rd.	High Class Bituminous	100	No	448	6.8	7.8	3046
091B		Norwich (Township)	Middletown Line	Old Stage Rd.	335m S. of Old Stage Rd.	High Class Bituminous	100	No	334	7	8	2338

Appendix E - Road Improvement Needs

Municipal ID	Roadside Environment	AADT Range	AADT	AADT Method	AADT Year	Ride Comfort Rating (RCR)	Structural Adequacy (1-20)	Drainage Deficiency Rating (1-10)	PCI / GCR	Condition Rating Class	Priority Guide Number (PGN)	Priority Rating (PR)	Proposed Lifecycle Improvement
220C	Semi-Urban	200-499	379	Estimate	N/A	9	19	14	91	Good Condition	0	8.14	Routine Maintenance
233	Urban	200-499	395	Estimate	N/A	9	19	15	91	Good Condition	0	8.22	Routine Maintenance
146	Rural	0-49	25	Estimate	N/A	9	18	14	91	Good Condition	0	5.11	Preventive Maintenance
272B	Rural	50-199	50	Estimate	N/A	9	19	15	91	Good Condition	0	5.54	Routine Maintenance
272C	Semi-Urban	50-199	50	Estimate	N/A	9	19	15	91	Good Condition	0	5.54	Routine Maintenance
105B.2	Rural	2000-2999	2542	Actual Count	2023	9	20	15	91	Good Condition	0	12.83	Routine Maintenance
132	Rural	500-999	660	Actual Count	2023	9	19	15	91	Good Condition	0	9.26	Routine Maintenance
270	Semi-Urban	500-999	698	Estimate	N/A	9	20	15	91	Good Condition	0	9.38	Routine Maintenance
062C	Rural	50-199	137	Actual Count	2023	9	18	14	91	Good Condition	0	6.57	Preventive Maintenance
011A	Semi-Urban	200-499	451	Actual Count	2022	9	20	15	91	Good Condition	0	8.47	Routine Maintenance
256C.3	Semi-Urban	50-199	75	Estimate	N/A	9	19	14	91	Good Condition	0	5.89	Routine Maintenance
256C.1	Semi-Urban	50-199	75	Estimate	N/A	9	19	13	91	Good Condition	0	5.89	Routine Maintenance
259C	Semi-Urban	50-199	75	Estimate	N/A	9	19	14	91	Good Condition	0	5.89	Routine Maintenance
259B	Semi-Urban	50-199	75	Estimate	N/A	9	19	13	91	Good Condition	0	5.89	Routine Maintenance
238C	Urban	200-499	250	Estimate	N/A	9	19	15	92	Good Condition	0	6.6	Routine Maintenance
202A.1	Semi-Urban	200-499	300	Estimate	N/A	9	19	15	92	Good Condition	0	6.87	Routine Maintenance
231B	Semi-Urban	200-499	303	Estimate	N/A	9	19	15	92	Good Condition	0	6.89	Routine Maintenance
071	Rural	1000-1999	1553	Actual Count	2022	9	20	15	92	Good Condition	0	10.11	Routine Maintenance
275A	Semi-Urban	50-199	50	Estimate	N/A	9	20	15	92	Good Condition	0	4.93	Routine Maintenance
275B	Semi-Urban	50-199	50	Estimate	N/A	9	20	15	92	Good Condition	0	4.93	Routine Maintenance
261C	Semi-Urban	500-999	815	Estimate	N/A	9	19	14	92	Good Condition	0	8.65	Routine Maintenance
261D	Semi-Urban	500-999	815	Estimate	N/A	9	19	14	92	Good Condition	0	8.65	Routine Maintenance
280	Semi-Urban	50-199	50	Estimate	N/A	9	20	15	92	Good Condition	0	4.93	Routine Maintenance
025A	Rural	50-199	61	Actual Count	2022	8	18	15	92	Good Condition	0	5.07	Preventive Maintenance
025B	Rural	50-199	61	Actual Count	2022	8	18	15	92	Good Condition	0	5.07	Preventive Maintenance
090B	Semi-Urban	1000-1999	1063	Actual Count	2023	9	20	15	92	Good Condition	0	9.22	Routine Maintenance
091C	Rural	500-999	904	Actual Count	2023	9	19	15	92	Good Condition	0	8.87	Routine Maintenance
099A	Rural	1000-1999	1075	Actual Count	2023	9	19	15	92	Good Condition	0	9.25	Routine Maintenance
271	Semi-Urban	1000-1999	1641	Estimate	N/A	9	20	15	92	Good Condition	0	10.24	Routine Maintenance
256B	Semi-Urban	50-199	100	Estimate	N/A	9	18	14	92	Good Condition	0	5.5	Routine Maintenance
009	Rural	1000-1999	1349	Actual Count	2022	9	20	15	92	Good Condition	0	9.77	Routine Maintenance
010	Rural	1000-1999	1507	Actual Count	2022	9	19	15	92	Good Condition	0	10.03	Routine Maintenance
299	Rural	0-49	15	Estimate	N/A	8	18	15	92	Good Condition	0	4.36	Preventive Maintenance
244	Semi-Urban	200-499	300	Estimate	N/A	9	19	15	92	Good Condition	0	6.87	Routine Maintenance
256C.2	Semi-Urban	50-199	75	Estimate	N/A	9	19	13	92	Good Condition	0	5.24	Routine Maintenance
062B	Rural	50-199	137	Actual Count	2023	9	19	15	92	Good Condition	0	5.84	Routine Maintenance
276	Semi-Urban	0-49	25	Estimate	N/A	9	19	15	92	Good Condition	0	4.54	Routine Maintenance
207B.2	Semi-Urban	200-499	350	Estimate	N/A	9	19	14	92	Good Condition	0	7.11	Routine Maintenance
228A	Urban	0-49	25	Estimate	N/A	9	19	14	92	Good Condition	0	4.54	Routine Maintenance
236A	Semi-Urban	200-499	250	Estimate	N/A	9	19	15	92	Good Condition	0	6.6	Routine Maintenance
236B	Semi-Urban	200-499	250	Estimate	N/A	9	19	15	92	Good Condition	0	6.6	Routine Maintenance
277D.1	Semi-Urban	0-49	40	Estimate	N/A	9	19	15	92	Good Condition	0	4.79	Routine Maintenance
053	Rural	500-999	636	Actual Count	2022	9	19	14	93	Good Condition	0	7.14	Routine Maintenance
258B	Semi-Urban	0-49	30	Estimate	N/A	9	19	14	93	Good Condition	0	4.05	Routine Maintenance
202B	Urban	200-499	300	Estimate	N/A	9	19	15	93	Good Condition	0	6.01	Routine Maintenance
277A	Semi-Urban	50-199	75	Estimate	N/A	9	19	15	93	Good Condition	0	4.58	Routine Maintenance
072B	Rural	1000-1999	1029	Actual Count	2022	9	20	15	93	Good Condition	0	8.01	Routine Maintenance
072C	Rural	1000-1999	1029	Actual Count	2022	9	20	15	93	Good Condition	0	8.01	Routine Maintenance
024A	Rural	50-199	58	Actual Count	2022	9	20	15	93	Good Condition	0	4.4	Routine Maintenance
247B	Urban	200-499	311	Estimate	N/A	9	20	15	93	Good Condition	0	6.06	Routine Maintenance
091A	Semi-Urban	500-999	904	Actual Count	2023	9	19	15	93	Good Condition	0	7.76	Routine Maintenance
091B	Semi-Urban	500-999	904	Actual Count	2023	9	19	15	93	Good Condition	0	7.76	Routine Maintenance

Appendix E - Road Improvement Needs

Municipal ID	Proposed Improvement Type	Improvement Cost	Base Cost (m ²)	Condition Comments
220C	Responsive Maintenance	\$0.00	\$0.00	
233	Responsive Maintenance	\$0.00	\$0.00	
146	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$1,620.00	\$1.00	Township noted they would like to make this a driveway
272B	Responsive Maintenance	\$0.00	\$0.00	
272C	Responsive Maintenance	\$0.00	\$0.00	
105B.2	Responsive Maintenance	\$0.00	\$0.00	
132	Responsive Maintenance	\$0.00	\$0.00	
270	Responsive Maintenance	\$0.00	\$0.00	
062C	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$1,323.00	\$1.00	
011A	Responsive Maintenance	\$0.00	\$0.00	
256C.3	Responsive Maintenance	\$0.00	\$0.00	
256C.1	Responsive Maintenance	\$0.00	\$0.00	
259C	Responsive Maintenance	\$0.00	\$0.00	
259B	Responsive Maintenance	\$0.00	\$0.00	
238C	Responsive Maintenance	\$0.00	\$0.00	
202A.1	Responsive Maintenance	\$0.00	\$0.00	
231B	Responsive Maintenance	\$0.00	\$0.00	
071	Responsive Maintenance	\$0.00	\$0.00	
275A	Responsive Maintenance	\$0.00	\$0.00	
275B	Responsive Maintenance	\$0.00	\$0.00	
261C	Responsive Maintenance	\$0.00	\$0.00	
261D	Responsive Maintenance	\$0.00	\$0.00	
280	Responsive Maintenance	\$0.00	\$0.00	
025A	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$9,570.00	\$1.00	
025B	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$2,088.00	\$1.00	
090B	Responsive Maintenance	\$0.00	\$0.00	
091C	Responsive Maintenance	\$0.00	\$0.00	
099A	Responsive Maintenance	\$0.00	\$0.00	
271	Responsive Maintenance	\$0.00	\$0.00	
256B	Responsive Maintenance	\$0.00	\$0.00	
009	Responsive Maintenance	\$0.00	\$0.00	
010	Responsive Maintenance	\$0.00	\$0.00	
299	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$708.00	\$1.00	
244	Responsive Maintenance	\$0.00	\$0.00	
256C.2	Responsive Maintenance	\$0.00	\$0.00	
062B	Responsive Maintenance	\$0.00	\$0.00	LCB surface with asphalt overlay
276	Responsive Maintenance	\$0.00	\$0.00	
207B.2	Responsive Maintenance	\$0.00	\$0.00	
228A	Responsive Maintenance	\$0.00	\$0.00	
236A	Responsive Maintenance	\$0.00	\$0.00	
236B	Responsive Maintenance	\$0.00	\$0.00	
277D.1	Responsive Maintenance	\$0.00	\$0.00	
053	Responsive Maintenance	\$0.00	\$0.00	
258B	Responsive Maintenance	\$0.00	\$0.00	
202B	Responsive Maintenance	\$0.00	\$0.00	
277A	Responsive Maintenance	\$0.00	\$0.00	
072B	Responsive Maintenance	\$0.00	\$0.00	
072C	Responsive Maintenance	\$0.00	\$0.00	
024A	Responsive Maintenance	\$0.00	\$0.00	
247B	Responsive Maintenance	\$0.00	\$0.00	
091A	Responsive Maintenance	\$0.00	\$0.00	
091B	Responsive Maintenance	\$0.00	\$0.00	

Appendix E - Road Improvement Needs

Municipal ID	Asset or PSAB ID	Community	Name	Name From	Name To	Surface Material	Capital Maint. %	Boundary Road	Road Length (m)	Road Width (m)	Platform Width (m)	Surface Area (m ²)
274	393	Burgessville	Smith's Lane	McNab St.	Church St. E.	Gravel	100	No	117	6.4	6.4	749
291		Otterville	Van Parys Dr.	Otter View Dr.	End (Cul-de-Sac)	High Class Bituminous	100	No	94	8.2	8.2	771
100B	430	Norwich (Township)	Vandecar Line	Substation Rd.	Beaconsfield Rd.	Gravel	100	No	1601	5	6	9606
125	464	Norwich (Township)	Zenda Line	Ninth Rd.	1.5 km N. of Ninth Rd.	High Class Bituminous	50	Yes	1499	7	7	10493
258C	273	Otterville	Albert St.	Wellington St. W.	Norfolk St.	High Class Bituminous	100	No	77	6.4	6.4	493
273C.2		Burgessville	Burgess St.	440m S. of Church St. E.	End	High Class Bituminous	100	No	237	6.7	6.7	1588
077	2561	Norwich (Township)	Cecilia St.	Not Recorded	Not Recorded	Gravel	100	No	180	5	5	900
230A.2	121	Norwich	Centre St.	Bailey St.	North Court St. W.	High Class Bituminous	100	No	105	6.5	6.5	683
230B.1	122	Norwich	Centre St.	North Court St. W.	Mary St.	High Class Bituminous	100	No	92	6.6	6.6	607
241A	135	Norwich	Cook St.	North Court St. E.	South Court St. E.	High Class Bituminous	100	No	85	7.7	7.7	655
281A		Norwich	Delong Dr.	Main St. W. (Oxford Rd. 18)	Tompkins Cr.	High Class Bituminous	100	No	119	8.6	8.6	1023
204A	307	Norwich	North Court St. E.	Stover St. N.	Albert St.	High Class Bituminous	100	No	71	7	7	497
235B.3	322	Norwich	North St. E.	Albert St.	Victoria St.	High Class Bituminous	100	No	77	6.8	6.8	524
011B	2573	Norwich (Township)	Old Stage Rd.	Highway 59	320m W. of Middletown Line	High Class Bituminous	100	No	3481	7.4	8.4	25759
228B	361	Norwich	Phebe St.	Main St. E.	End	High Class Bituminous	100	No	183	7.4	7.4	1354
050	2552	Norwich (Township)	Pleasant Valley Rd.	Middletown Line	Oxford Rd. 13	High Class Bituminous	100	No	3730	7.2	8.2	26856
251A		Norwich	Poldon Dr.	Lossing Dr.	Brock St. E.	High Class Bituminous	100	No	165	8.6	8.6	1419
249C	2632	Norwich	Pollard St.	Marshall Dr.	Delong Dr.	High Class Bituminous	100	No	233	8.6	8.6	2004
217A	404	Norwich	South St.	Pitcher St.	Otter St.	High Class Bituminous	100	No	85	7	7	595
282		Norwich	Tompkins Cr.	Delong Dr.	End (Cul-de-Sac)	High Class Bituminous	100	No	154	8.6	8.6	1324
051A	2738	Norwich (Township)	Airport Rd.	Middletown Line	Pick Line	High Class Bituminous	100	No	1573	7.2	8.2	11326
238A		Norwich	Albert St.	67m N. of North St. E.	End (Cul-de-Sac)	High Class Bituminous	100	No	145	8.7	8.7	1262
238B	56	Norwich	Albert St.	North St. E.	67m N. of North St. E.	High Class Bituminous	100	No	67	8.7	8.7	583
107D	73	Norwich (Township)	Base Line	Evergreen St.	Hatchley Rd.	High Class Bituminous	100	No	428	7.2	8.2	3082
107E	74	Norwich (Township)	Base Line	Hatchley Rd.	Quaker St.	High Class Bituminous	100	No	1188	7.2	8.2	8554
283		Norwich	Dennis Dr.	Pollard St.	Delong Dr.	High Class Bituminous	100	No	435	8.5	8.5	3698
232A	213	Norwich	John St.	Brock St. W.	End	High Class Bituminous	100	No	106	6.6	6.6	700
232B	209	Norwich	John St.	Brock St. W.	North Court St. W.	High Class Bituminous	100	No	177	6.7	6.7	1186
232C	212	Norwich	John St.	North Court St. W.	South Court St. W.	High Class Bituminous	100	No	80	6.7	6.7	536
232D	211	Norwich	John St.	South Court St. W.	Elgin St. W.	High Class Bituminous	100	No	166	6.7	6.7	1112
204B	305	Norwich	North Court St. E.	Albert St.	Victoria St.	High Class Bituminous	100	No	79	7	7	553
204C	306	Norwich	North Court St. E.	Victoria St.	Cook St.	High Class Bituminous	100	No	90	7.9	7.9	711
204D	310	Norwich	North Court St. E.	Polden Dr	Cook St.	High Class Bituminous	100	No	193	8.6	8.6	1660
235B.2	323	Norwich	North St. E.	Stover St. N.	Albert St.	High Class Bituminous	100	No	74	6.7	6.7	496
235B.4	2640	Norwich	North St. E.	Victoria St.	Poldon Dr.	High Class Bituminous	100	No	82	8.6	8.6	705
251B		Norwich	Poldon Dr.	North St. E.	Brock St. E.	High Class Bituminous	100	No	178	8.6	8.6	1531
251E		Norwich	Poldon Dr.	Bushell Cr.	Lossing Dr.	High Class Bituminous	100	No	226	8.6	8.6	1944
046B	2588	Norwich (Township)	Quaker St.	Utility Line	Slant Rd.	High Class Bituminous	100	No	537	7.1	8.1	3813
106A.1	2581	Norwich (Township)	Slant Rd.	Second Rd.	New Durham Rd.	High Class Bituminous	100	No	46	7	8	322
106A.2	2734	Norwich (Township)	Slant Rd.	New Durham Line	Evergreen St.	High Class Bituminous	100	No	2342	7	8	16394
106C	2609	Norwich (Township)	Slant Rd.	Quaker St.	552m N. of Quaker St.	High Class Bituminous	100	No	552	7.2	8.2	3974
252		Norwich	Bushell Cr.	Poldon Dr.	End (Cul-de-Sac)	High Class Bituminous	100	No	77	8.6	8.6	662
264	2358	Norwich (Township)	James St.	Otterville Rd. (Oxford Rd. 19)	End	High Class Bituminous	100	No	882	6.2	6.2	5468
056C		Norwich (Township)	Maple Dell Rd.	Highway 59	225m W. of Highway 59	High Class Bituminous	100	No	222	7.4	7.4	1643
046A	2587	Norwich (Township)	Quaker St.	Highway 59	Utility Line	High Class Bituminous	100	No	113	7.1	8.1	802
106B	2735	Norwich (Township)	Slant Rd.	Evergreen St.	552m N. of Quaker St.	High Class Bituminous	100	No	1593	7.2	8.2	11470
207B.3	397	Norwich	South Court St. E.	Cook St.	End	High Class Bituminous	100	No	160	8	8	1280
110	426	Norwich (Township)	Utility Line	Quaker St.	Highway 59	High Class Bituminous	100	No	456	7	8	3192
235A.2	432	Norwich	Victoria St.	Brock St. E.	North Court St. E.	High Class Bituminous	100	No	179	6.8	6.8	1217

Appendix E - Road Improvement Needs

Municipal ID	Roadside Environment	AADT Range	AADT	AADT Method	AADT Year	Ride Comfort Rating (RCR)	Structural Adequacy (1-20)	Drainage Deficiency Rating (1-10)	PCI / GCR	Condition Rating Class	Priority Guide Number (PGN)	Priority Rating (PR)	Proposed Lifecycle Improvement
274	Semi-Urban	0-49	25	Estimate	N/A	8	19	14	93	Good Condition	0	3.98	Preventive Maintenance
291	Urban	0-49	20	Estimate	N/A	9	19	14	93	Good Condition	0	3.9	Routine Maintenance
100B	Rural	0-49	24	Actual Count	2023	8	19	14	93	Good Condition	0	3.96	Preventive Maintenance
125	Rural	500-999	771	Estimate	N/A	9	19	14	93	Good Condition	0	7.47	Routine Maintenance
258C	Semi-Urban	0-49	15	Estimate	N/A	9	19	15	94	Good Condition	0	3.27	Routine Maintenance
273C.2	Semi-Urban	50-199	100	Estimate	N/A	9	19	14	94	Good Condition	0	4.13	Routine Maintenance
077	Rural	0-49	30	Estimate	N/A	9	19	14	94	Good Condition	0	3.47	Preventive Maintenance
230A.2	Semi-Urban	50-199	100	Estimate	N/A	9	20	15	94	Good Condition	0	4.13	Routine Maintenance
230B.1	Semi-Urban	200-499	392	Estimate	N/A	9	20	15	94	Good Condition	0	5.47	Routine Maintenance
241A	Semi-Urban	200-499	276	Estimate	N/A	9	20	13	94	Good Condition	0	5.06	Routine Maintenance
281A	Urban	200-499	350	Estimate	N/A	9	19	15	94	Good Condition	0	5.33	Routine Maintenance
204A	Semi-Urban	200-499	300	Estimate	N/A	9	19	15	94	Good Condition	0	5.15	Routine Maintenance
235B.3	Urban	200-499	300	Estimate	N/A	9	19	15	94	Good Condition	0	5.15	Routine Maintenance
011B	Rural	200-499	451	Actual Count	2022	9	20	15	94	Good Condition	0	5.65	Routine Maintenance
228B	Semi-Urban	200-499	300	Estimate	N/A	9	20	14	94	Good Condition	0	5.15	Routine Maintenance
050	Rural	200-499	311	Actual Count	2023	9	20	15	94	Good Condition	0	5.19	Routine Maintenance
251A	Urban	200-499	200	Estimate	N/A	9	19	15	94	Good Condition	0	4.72	Routine Maintenance
249C	Urban	200-499	250	Estimate	N/A	9	19	15	94	Good Condition	0	4.95	Routine Maintenance
217A	Semi-Urban	200-499	250	Estimate	N/A	9	19	15	94	Good Condition	0	4.95	Routine Maintenance
282	Urban	50-199	50	Estimate	N/A	9	19	15	94	Good Condition	0	3.7	Routine Maintenance
051A	Rural	1000-1999	1288	Actual Count	2022	9	20	15	95	Good Condition	0	6.04	No Maintenance Required
238A	Urban	0-49	35	Estimate	N/A	9	19	15	95	Good Condition	0	2.94	No Maintenance Required
238B	Urban	50-199	75	Estimate	N/A	9	19	15	95	Good Condition	0	3.27	No Maintenance Required
107D	Rural	500-999	909	Actual Count	2022	9	19	15	95	Good Condition	0	5.55	No Maintenance Required
107E	Rural	500-999	909	Actual Count	2022	9	20	15	95	Good Condition	0	5.55	No Maintenance Required
283	Urban	50-199	50	Estimate	N/A	9	19	15	95	Good Condition	0	3.08	No Maintenance Required
232A	Urban	0-49	10	Estimate	N/A	9	19	15	95	Good Condition	0	2.66	No Maintenance Required
232B	Urban	200-499	350	Estimate	N/A	9	19	15	95	Good Condition	0	4.44	No Maintenance Required
232C	Urban	200-499	350	Estimate	N/A	9	19	15	95	Good Condition	0	4.44	No Maintenance Required
232D	Urban	200-499	350	Estimate	N/A	9	19	15	95	Good Condition	0	4.44	No Maintenance Required
204B	Semi-Urban	200-499	300	Estimate	N/A	9	19	15	95	Good Condition	0	4.29	No Maintenance Required
204C	Semi-Urban	200-499	300	Estimate	N/A	9	19	15	95	Good Condition	0	4.29	No Maintenance Required
204D	Urban	200-499	300	Estimate	N/A	9	19	15	95	Good Condition	0	4.29	No Maintenance Required
235B.2	Urban	200-499	300	Estimate	N/A	9	19	15	95	Good Condition	0	4.29	No Maintenance Required
235B.4	Urban	200-499	300	Estimate	N/A	9	19	15	95	Good Condition	0	4.29	No Maintenance Required
251B	Urban	200-499	300	Estimate	N/A	9	19	15	95	Good Condition	0	4.29	No Maintenance Required
251E	Urban	200-499	275	Estimate	N/A	9	20	15	95	Good Condition	0	4.21	No Maintenance Required
046B	Rural	1000-1999	1185	Actual Count	2023	9	20	15	95	Good Condition	0	5.92	No Maintenance Required
106A.1	Rural	1000-1999	1773	Actual Count	2023	9	20	15	95	Good Condition	0	6.53	No Maintenance Required
106A.2	Rural	1000-1999	1773	Actual Count	2023	9	20	15	95	Good Condition	0	6.53	No Maintenance Required
106C	Rural	1000-1999	1119	Estimate	N/A	9	20	15	95	Good Condition	0	5.83	No Maintenance Required
252	Urban	0-49	25	Estimate	N/A	9	20	15	96	Good Condition	0	2.27	No Maintenance Required
264	Semi-Urban	200-499	250	Estimate	N/A	9	20	15	96	Good Condition	0	3.3	No Maintenance Required
056C	Rural	50-199	83	Actual Count	2023	9	20	15	96	Good Condition	0	2.66	No Maintenance Required
046A	Rural	1000-1999	1185	Actual Count	2023	9	20	15	96	Good Condition	0	4.73	No Maintenance Required
106B	Rural	1000-1999	1773	Actual Count	2023	9	20	15	96	Good Condition	0	5.22	No Maintenance Required
207B.3	Semi-Urban	200-499	350	Estimate	N/A	9	19	15	96	Good Condition	0	3.56	No Maintenance Required
110	Rural	200-499	400	Estimate	N/A	9	20	15	96	Good Condition	0	3.66	No Maintenance Required
235A.2	Semi-Urban	200-499	250	Estimate	N/A	9	20	13	96	Good Condition	0	3.3	No Maintenance Required

Appendix E - Road Improvement Needs

Municipal ID	Proposed Improvement Type	Improvement Cost	Base Cost (m ²)	Condition Comments
274	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$749.00	\$1.00	Semi-urban gravel road. Good candidate for conversion in the future
291	Responsive Maintenance	\$0.00	\$0.00	
100B	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$9,606.00	\$1.00	
125	Responsive Maintenance	\$0.00	\$0.00	
258C	Responsive Maintenance	\$0.00	\$0.00	Tree trimming is required, stop sign is obstructed
273C.2	Responsive Maintenance	\$0.00	\$0.00	
077	Maintenance Gravel + Dust Suppressant (Once every 4 years)	\$900.00	\$1.00	
230A.2	Responsive Maintenance	\$0.00	\$0.00	
230B.1	Responsive Maintenance	\$0.00	\$0.00	
241A	Responsive Maintenance	\$0.00	\$0.00	
281A	Responsive Maintenance	\$0.00	\$0.00	
204A	Responsive Maintenance	\$0.00	\$0.00	
235B.3	Responsive Maintenance	\$0.00	\$0.00	
011B	Responsive Maintenance	\$0.00	\$0.00	
228B	Responsive Maintenance	\$0.00	\$0.00	
050	Responsive Maintenance	\$0.00	\$0.00	
251A	Responsive Maintenance	\$0.00	\$0.00	
249C	Responsive Maintenance	\$0.00	\$0.00	
217A	Responsive Maintenance	\$0.00	\$0.00	
282	Responsive Maintenance	\$0.00	\$0.00	
051A	No Maintenance Required	\$0.00	\$0.00	
238A	No Maintenance Required	\$0.00	\$0.00	Newly assumed road
238B	No Maintenance Required	\$0.00	\$0.00	
107D	No Maintenance Required	\$0.00	\$0.00	
107E	No Maintenance Required	\$0.00	\$0.00	
283	No Maintenance Required	\$0.00	\$0.00	Surface asphalt was completed last year (2022)
232A	No Maintenance Required	\$0.00	\$0.00	
232B	No Maintenance Required	\$0.00	\$0.00	
232C	No Maintenance Required	\$0.00	\$0.00	
232D	No Maintenance Required	\$0.00	\$0.00	
204B	No Maintenance Required	\$0.00	\$0.00	
204C	No Maintenance Required	\$0.00	\$0.00	
204D	No Maintenance Required	\$0.00	\$0.00	
235B.2	No Maintenance Required	\$0.00	\$0.00	
235B.4	No Maintenance Required	\$0.00	\$0.00	
251B	No Maintenance Required	\$0.00	\$0.00	
251E	No Maintenance Required	\$0.00	\$0.00	
046B	No Maintenance Required	\$0.00	\$0.00	
106A.1	No Maintenance Required	\$0.00	\$0.00	
106A.2	No Maintenance Required	\$0.00	\$0.00	
106C	No Maintenance Required	\$0.00	\$0.00	
252	No Maintenance Required	\$0.00	\$0.00	
264	No Maintenance Required	\$0.00	\$0.00	
056C	No Maintenance Required	\$0.00	\$0.00	Township noted that this segment was upgraded to remove the load restriction as part of the premier dealership development
046A	No Maintenance Required	\$0.00	\$0.00	
106B	No Maintenance Required	\$0.00	\$0.00	
207B.3	No Maintenance Required	\$0.00	\$0.00	
110	No Maintenance Required	\$0.00	\$0.00	
235A.2	No Maintenance Required	\$0.00	\$0.00	

Appendix E - Road Improvement Needs

Municipal ID	Asset or PSAB ID	Community	Name	Name From	Name To	Surface Material	Capital Maint. %	Boundary Road	Road Length (m)	Road Width (m)	Platform Width (m)	Surface Area (m ²)
240A	436	Norwich	Victoria St.	North Court St. E.	South Court St. E.	High Class Bituminous	100	No	81	6.7	6.7	543
277B	123	Springford	Wood St. W.	Church St.	End	High Class Bituminous	100	No	123	6.2	6.2	763
051B	2590	Norwich (Township)	Airport Rd.	Pick Line	Highway 59	High Class Bituminous	100	No	2090	7.2	8.2	15048
241B.1	136	Norwich	Cook St.	South Court St. E.	Elgin St. E.	High Class Bituminous	100	No	166	7.7	7.7	1278
241B.2	137	Norwich	Cook St.	Elgin St. E.	Main St. E.	High Class Bituminous	100	No	151	7.7	7.7	1163
251D		Norwich	Poldon Dr.	Lossing Dr.	Bushell Crt.	High Class Bituminous	100	No	231	8.6	8.6	1987
044	377	Norwich (Township)	Quaker St.	Oxford Rd. 13	Middletown Line	High Class Bituminous	100	No	3730	7.2	8.2	26856
145A	387	Norwich (Township)	Second Rd.	New Durham Rd.	Slant Rd.	High Class Bituminous	100	No	73	6.8	6.8	496
145B	386	Norwich (Township)	Second Rd.	Slant Rd.	Base Line	High Class Bituminous	100	No	136	6.8	6.8	925
087	2733	Norwich (Township)	Subway Line	Highway 53	Towerline Rd.	High Class Bituminous	100	No	405	7.1	7.1	2876
240B	434	Norwich	Victoria St.	South Court St. E.	Elgin St. E.	High Class Bituminous	100	No	167	6.7	6.7	1119
240C	435	Norwich	Victoria St.	Elgin St. E.	Main St. E.	High Class Bituminous	100	No	150	6.7	6.7	1005
127	2614	Norwich (Township)	Middletown Line	Otterville Rd. (Oxford Rd. 19)	Ninth Rd.	High Class Bituminous	100	No	1602	7.5	8.5	12015
129	2616	Norwich (Township)	Middletown Line	Ninth Rd.	Cornell Rd.	High Class Bituminous	100	No	559	7.5	8.5	4193
043	378	Norwich (Township)	Quaker St.	Zenda Line	Oxford Rd. 13	High Class Bituminous	100	No	3733	7	7	26131
042A	2557	Norwich (Township)	11th Concession Rd.	Base Line	Township Boundary	Gravel	0	No	156	6	7	1092
042C	2559	Norwich (Township)	13th Concession Rd.	Base Line	Township Boundary	Gravel	0	No	502	6	7	3514
096B	115	Norwich (Township)	Cedar Line	Substation Rd.	Gunn's Hill Rd.	Gravel	50	Yes	1367	4.2	6.6	5426
098	116	Norwich (Township)	Cedar Line	Beaconsfield Rd.	Substation Rd.	Gravel	50	Yes	1962	3.2	5.6	10987.2
108A	460	Norwich (Township)	Zenda Line	Norwich Rd. (County Rd. 18)	Quaker St.	Gravel	50	Yes	1590	6.3	8.3	13197
108B	460	Norwich (Township)	Zenda Line	Pleasant Valley Rd.	Norwich Rd. (County Rd. 18)	Gravel	50	Yes	1694	6.3	8.3	14060
113	461	Norwich (Township)	Zenda Line	Maple Dell Rd.	Pleasant Valley Rd.	Gravel	50	Yes	1589	7	9	14301
118	462	Norwich (Township)	Zenda Line	Milldale Rd.	Maple Dell Rd.	Gravel	50	Yes	1612	6.4	9.4	15152.8
122	2611	Norwich (Township)	Zenda Line	Otterville Rd.	Milldale Rd.	Gravel	50	Yes	1617	5.8	8.6	13906.2

Appendix E - Road Improvement Needs

Municipal ID	Roadside Environment	AADT Range	AADT	AADT Method	AADT Year	Ride Comfort Rating (RCR)	Structural Adequacy (1-20)	Drainage Deficiency Rating (1-10)	PCI / GCR	Condition Rating Class	Priority Guide Number (PGN)	Priority Rating (PR)	Proposed Lifecycle Improvement
240A	Urban	200-499	250	Estimate	N/A	9	20	15	96	Good Condition	0	3.3	No Maintenance Required
277B	Semi-Urban	0-49	25	Estimate	N/A	9	19	15	96	Good Condition	0	2.27	No Maintenance Required
051B	Rural	1000-1999	1288	Actual Count	2022	9	20	15	97	Good Condition	0	3.62	No Maintenance Required
241B.1	Urban	200-499	276	Estimate	N/A	9	20	15	97	Good Condition	0	2.53	No Maintenance Required
241B.2	Urban	200-499	276	Estimate	N/A	9	20	15	97	Good Condition	0	2.53	No Maintenance Required
251D	Urban	200-499	275	Estimate	N/A	9	19	15	97	Good Condition	0	2.53	No Maintenance Required
044	Rural	200-499	258	Actual Count	2023	9	20	0	97	Good Condition	0	2.49	No Maintenance Required
145A	Rural	50-199	104	Estimate	N/A	9	20	15	97	Good Condition	0	2.08	No Maintenance Required
145B	Rural	50-199	104	Estimate	N/A	9	20	15	97	Good Condition	0	2.08	No Maintenance Required
087	Rural	500-999	508	Actual Count	2023	9	20	15	97	Good Condition	0	2.9	No Maintenance Required
240B	Urban	200-499	250	Estimate	N/A	9	20	15	97	Good Condition	0	2.48	No Maintenance Required
240C	Urban	200-499	250	Estimate	N/A	9	20	15	97	Good Condition	0	2.48	No Maintenance Required
127	Rural	500-999	574	Actual Count	2023	10	20	15	99	Good Condition	0	1	No Maintenance Required
129	Rural	500-999	574	Actual Count	2023	10	20	15	99	Good Condition	0	1	No Maintenance Required
043	Rural	200-499	255	Actual Count	2023	10	20	15	99	Good Condition	0	0.83	No Maintenance Required
042A	Rural	50-199	158	Estimate	N/A	N/A	N/A	N/A	N/A	N/A	0	0	N/A
042C	Rural	50-199	158	Estimate	N/A	N/A	N/A	N/A	N/A	N/A	0	0	N/A
096B	Rural	50-199	76	Actual Count	2023	N/A	N/A	N/A	N/A	N/A	0	11	N/A
098	Rural	50-199	154	Estimate	N/A	N/A	N/A	N/A	N/A	N/A	0	13	N/A
108A	Rural	50-199	121	Actual Count	2023	N/A	N/A	N/A	N/A	N/A	0	0	N/A
108B	Rural	50-199	121	Actual Count	2023	N/A	N/A	N/A	N/A	N/A	0	0	N/A
113	Rural	200-499	229	Estimate	N/A	N/A	N/A	N/A	N/A	N/A	0	0	N/A
118	Rural	200-499	229	Estimate	N/A	N/A	N/A	N/A	N/A	N/A	0	0	N/A
122	Rural	200-499	229	Estimate	N/A	N/A	N/A	N/A	N/A	N/A	0	0	N/A

Appendix E - Road Improvement Needs

Municipal ID	Proposed Improvement Type	Improvement Cost	Base Cost (m ²)	Condition Comments
240A	No Maintenance Required	\$0.00	\$0.00	
277B	No Maintenance Required	\$0.00	\$0.00	
051B	No Maintenance Required	\$0.00	\$0.00	
241B.1	No Maintenance Required	\$0.00	\$0.00	
241B.2	No Maintenance Required	\$0.00	\$0.00	
251D	No Maintenance Required	\$0.00	\$0.00	
044	No Maintenance Required	\$0.00	\$0.00	
145A	No Maintenance Required	\$0.00	\$0.00	
145B	No Maintenance Required	\$0.00	\$0.00	
087	No Maintenance Required	\$0.00	\$0.00	
240B	No Maintenance Required	\$0.00	\$0.00	
240C	No Maintenance Required	\$0.00	\$0.00	
127	No Maintenance Required	\$0.00	\$0.00	To be paved in 2023 (pulverized at the time of inspection)
129	No Maintenance Required	\$0.00	\$0.00	To be paved in 2023 (pulverized at the time of inspection)
043	No Maintenance Required	\$0.00	\$0.00	To be paved in 2023 (crews were pulverizing the road at the time of inspection)
042A	N/A	\$0.00	\$0.00	Maintained by Brant County
042C	N/A	\$0.00	\$0.00	Maintained by Brant County
096B	N/A	\$0.00	\$0.00	
098	N/A	\$0.00	\$0.00	
108A	N/A	\$0.00	\$0.00	
108B	N/A	\$0.00	\$0.00	
113	N/A	\$0.00	\$0.00	
118	N/A	\$0.00	\$0.00	
122	N/A	\$0.00	\$0.00	



BURNSIDE

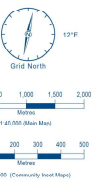
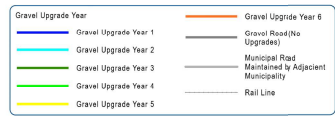
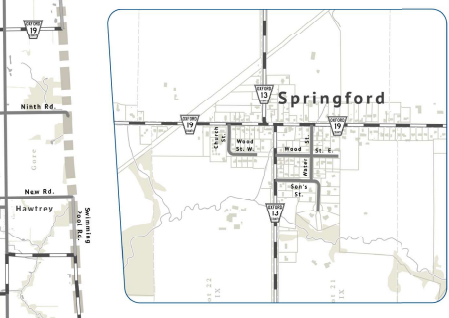
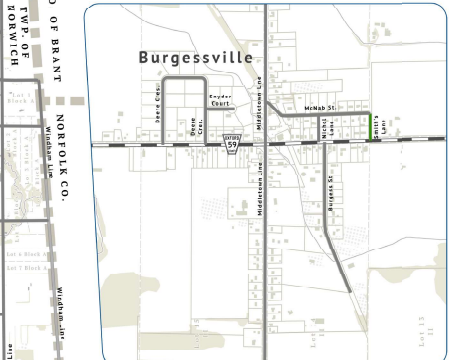
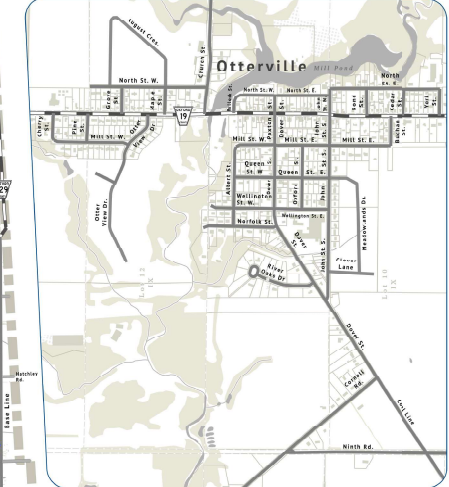
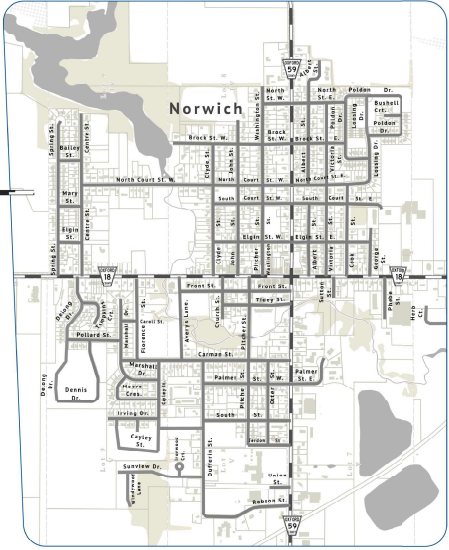
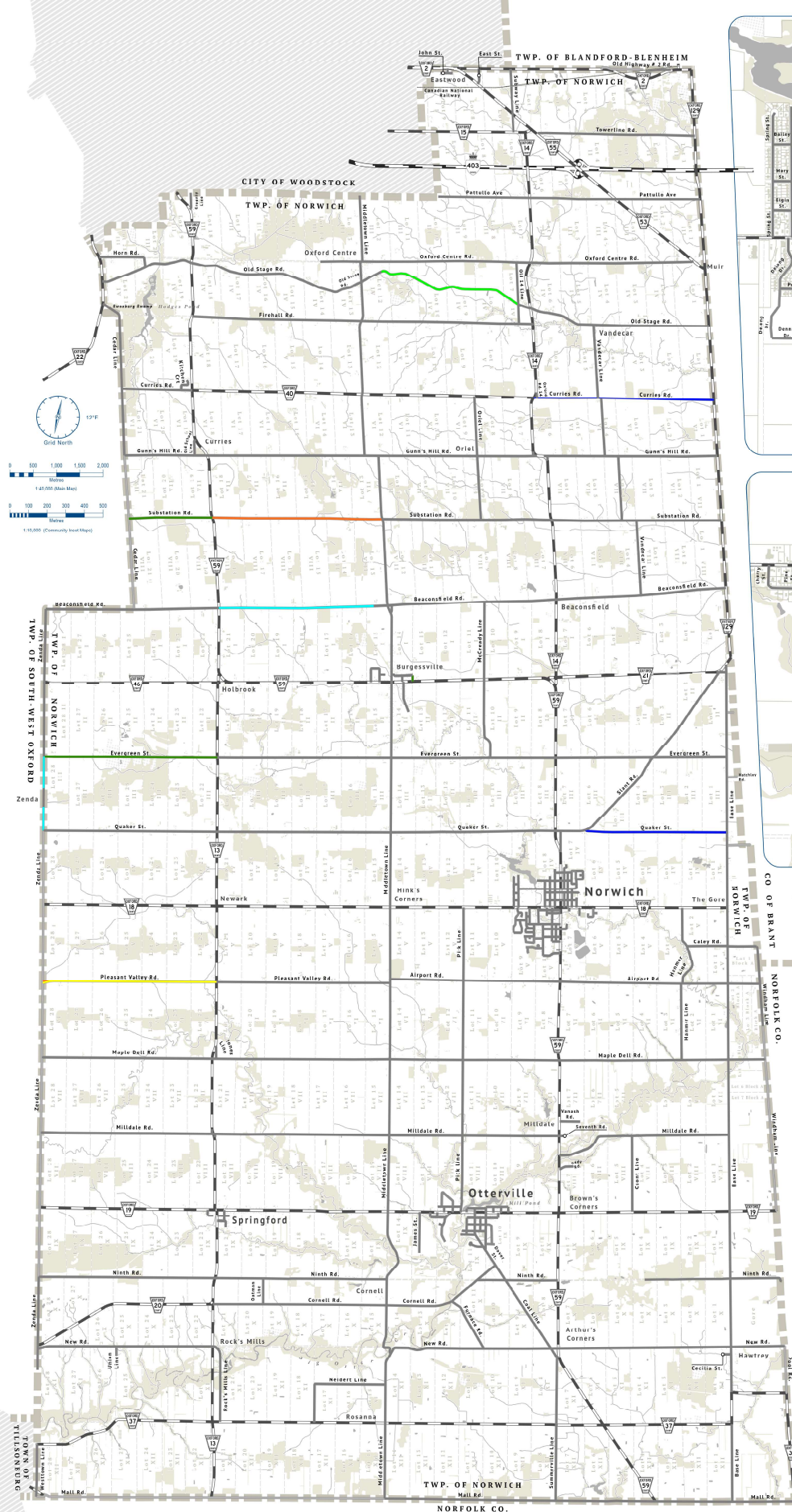
[THE DIFFERENCE IS OUR PEOPLE]



Appendix B

10-year Gravel Road Upgrading Plan

DRAFT



Drawn: North American 1002 (2023)
Project: Norwich Roads Needs Study 2023
Project Manager: Tracy M. Munn
Project Engineer: Tracy M. Munn
Project Designer: Tracy M. Munn
Project Checker: Tracy M. Munn
Project Approver: Tracy M. Munn
Scale Factor: 1:50,000

Drawn: Tracy M. Munn
Checked: Tracy M. Munn
Project: Norwich Roads Needs Study 2023
Project Designer: Tracy M. Munn
Project Checker: Tracy M. Munn
Project Approver: Tracy M. Munn
Scale Factor: 1:50,000